DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET SUBMISSION
OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY

EXECUTIVE BUDGET SUMMARY

Mission

The Office of Nuclear Energy, Science and Technology (NE) is home to much of the Federal Government's expertise in nuclear technology. This expertise is critical to assuring that, through its unique technical resources, the United States Government has the ability to respond to issues related to nuclear technology, including energy resource issues, matters of national security, nuclear safety, nuclear engineering education, nuclear research, and the production and distribution of isotopes for medical and research uses. The United States relies on nuclear energy technology to provide more than a fifth of its electricity, to provide critical isotopes for health care and industry, to enhance our understanding of the solar system, and to support the nation's security. Many other countries in the world are even more reliant on nuclear energy, and nuclear energy will continue to become increasingly important as the next century unfolds. Because of our reliance on this vital technology for economic, energy, and national security, the Department of Energy continues to invest in services, products, and technologies that are beyond the capability of private industry alone.

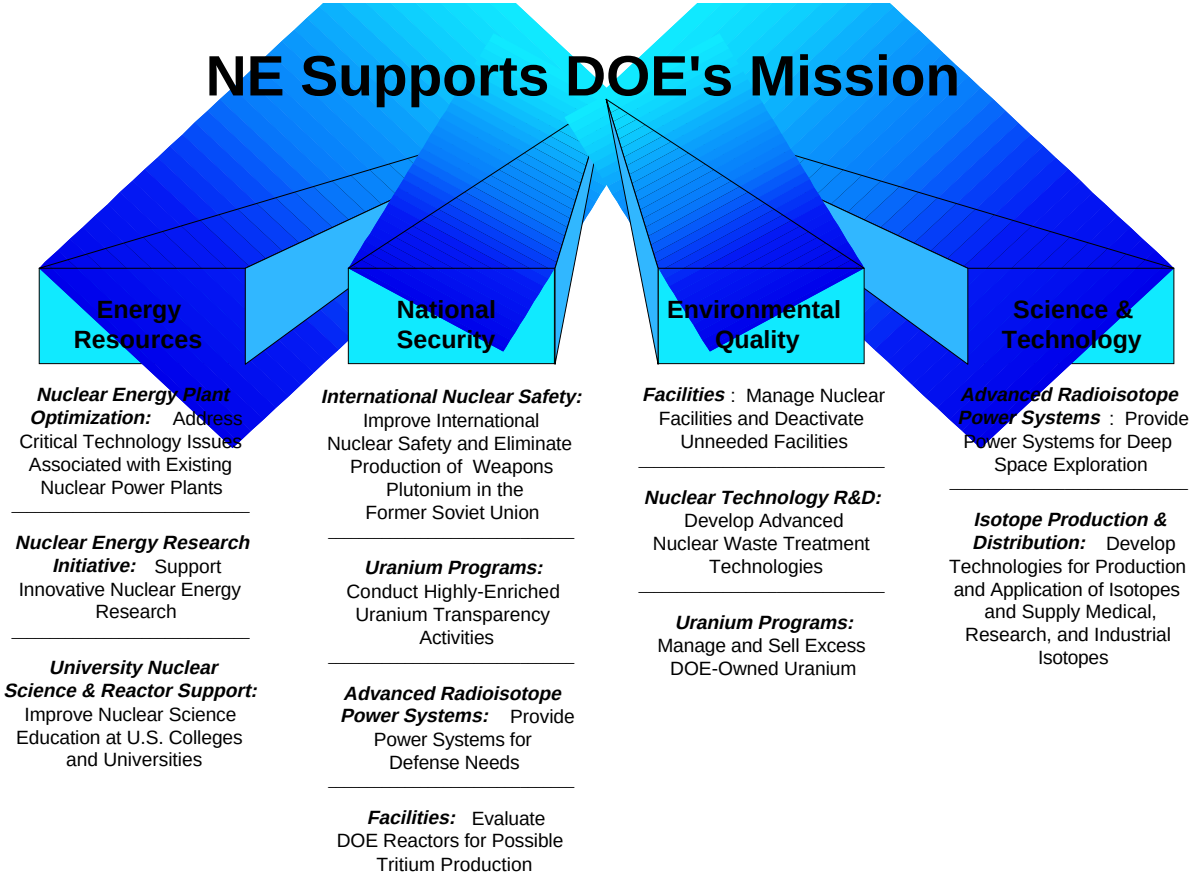
NE contributes to the success of the Department's four business line goals. NE supports the Department's commitment to promote secure, competitive, and environmentally responsible energy systems that serve the needs of the public by assisting in efforts to ensure that a competitive electricity generation industry is in place that can deliver adequate and affordable supplies with reduced environmental impact. NE also assists in the efforts to reduce the nuclear weapons stockpiles and the proliferation threat caused by the possible diversion of nuclear materials, meet national security requirements for naval nuclear propulsion and to improve international nuclear safety, to meet the Department's commitment to support national security, promote international nuclear safety, and reduce the global danger from weapons of mass destruction. The Department's commitment to aggressively clean up the environmental legacy of nuclear weapons and civilian nuclear research and development programs, minimize future waste generation, safely manage nuclear materials, and permanently dispose of the Nation's radioactive wastes is supported by NE's efforts to reduce the life-cycle costs of environmental cleanup. Lastly, NE is involved in the Department's commitment to deliver the scientific understanding and technological innovations that are critical to the success of DOE's mission and the Nation's science base by delivering leading-edge technologies that are critical to the DOE mission and the Nation.

Working with industry, academia, the national laboratories, other Government agencies, and international partners, the Office has established goals that derive from the Department's strategic plan and guide our day-to-day activities. NE's goals are to:

- Improve the safety of nuclear activities internationally
- Reduce nuclear weapons stockpiles and the proliferation threat caused by the possible diversion of nuclear materials
- Eliminate production of weapons plutonium in Russia
- Provide compact, reliable nuclear power systems and related technologies to space and national security customers
- Evaluate DOE reactors for possible tritium production
- Manage NE facilities and Office of Energy Research (ER) research reactors in a safe, economic, and environmentally-sound manner and deactivate unneeded facilities
- Develop advanced nuclear waste treatment technologies
- Manage and sell excess DOE-owned uranium
- Address critical technology issues associated with existing nuclear power plants
- Support innovative nuclear energy research
- Develop technologies for production and application of isotopes and ensure a reliable supply of medical, research, and industrial isotopes
- Improve nuclear science education at U.S. colleges and universities

In addition, NE is continuing to streamline its operations and organization to respond to National Performance Review objectives to make Government more effective, efficient, and responsive.

This budget is the first to be prepared under the Government Performance and Results Act of 1993. The Act requires Government agencies to prepare strategic plans, performance plans, and performance reports that measure progress against goals. The Department's Strategic Plan consists of four Business Lines and a Corporate Management activity. NE's goals are derived from the Department's plan. The figure below shows NE's primary programs and their relationship to the Department's business lines. Budget decision units are shown in bold type.



Strategy

In accomplishing its program objectives, the Office of Nuclear Energy, Science and Technology will engage research institutions in other countries, international organizations, national laboratories, U.S. universities, and industry in cooperative and collaborative efforts. The major program elements that contribute to the mission are: International Nuclear Safety, Nuclear Energy Research Initiative, Nuclear Technology R&D, Uranium Programs, Isotope Production and Distribution, Advanced Radioisotopes, University Research Support, TRA Landlord, Nuclear Energy Plant Optimization, Facilities, and Program Direction. Program accomplishments that will enable NE to achieve it's mission are identified in the detailed program budget submissions. Programs that make up the NE budget are funded in the accounts shown below:

Budget Operating Unit (Account)	*FY 1997*	*FY 1998*	*FY 1999*
Energy Supply R&D			
Nuclear Energy R&D	$100,887	$66,373	$116,900
Facilities	110,689	76,149	96,150
Isotope Support	11,704	19,473	22,450
Uranium Programs (Gross)	56,466	63,857	66,700
Program Direction (Comparable)	19,054	21,000	23,550
International Nuclear Safety	81,000	35,000	35,000
Nuclear Security	3,500	0	0
Use of PY Balances/General Reduction	(22,328)	(8,221)	0
Total, All Accounts	**$360,972**	**$273,631**	**$360,750**

Note: Dollars in thousands.

Major Changes

In FY 1999, the Department will initiate new nuclear energy R&D activities to support innovative research and development at universities, national laboratories to address technical issues such as advanced fuel cladding and improving the proliferation resistance of nuclear fuel, and at industry to address technical issues associated with the continued operation and optimization of the nation's nuclear power plants.

Major Issues

In FY 1999, Fast Flux Test Reactor has been returned to the Office of Nuclear Energy, Science and Technology budget as part of the Departmental initiative to determine the facility's possible role in tritium and medical isotope production.

Site Funding

Site funding is provided in individual decision units.

Performance Measures

Key program performance measures used to judge the effectiveness of each program element are shown below. In addition to the technical effectiveness measures shown, program progress, customer satisfaction, and employee satisfaction are monitored to ensure that NE's programs are relevant and managed in a cost-effective manner.

International Nuclear Safety

- Complete an alternate decay heat removal system and install steam line isolation valves at the Armenia nuclear power plant to ensure safety plant shutdown in case of an earthquake
- Complete full-scope simulators for the South Ukraine and Zaporizhzhya plants in Ukraine
- Complete a fire hazards safe reactor shutdown study at the Smolensk plant in Russia
- Complete an analytical simulator and an upgrade to a full-scope simulator at the Balakovo plant in Russia
- Complete full-scope simulators at the Kola and Kalinin plants in Russia
- Complete an upgrade of the full-scope simulator at the Trnava training center in Slovakia
- Complete technology transfer projects for emergency power supply batteries, circuit breakers and emergency valves in Russia and safety control modules in Lithuania
- Complete four Safety Parameter Display Systems at plants in Russia and Ukriane to improve operator response to emergencies
- Complete in-depth safety assessments at the Leningrad and Kola plants in Russia
- Complete an upgrade to the full-scope simulator at the Kozloduy plant in Bulgaria

Facilities

- Support evaluation of the tritium and medical isotope production capabilities of the Fast Flux Test Facility (FFTF), one of the candidates available to the Department for selection by December 1998
- Maintain the FFTF and Fuels and Materials Examination Facility (FMEF) in a safe and environmentally compliant condition
- Continue ANL-W site shutdown activities, including operation of facilities required to support shutdown safely in accordance with applicable rules, regulations, approved safety documentation, and DOE directives
- In FY 1999, prepare the appropriate National Environmental Policy Act documentation and environmental permits for FFTF and FMEF

Isotope Production and Distribution

- Supply quality stable and radioactive isotopes for industrial, research, and medical applications that continue to meet customer specifications and maintain 95 percent on-time deliveries in FY 1998 and beyond
- Complete construction and commissioning of the Los Alamos Target Irradiation Station in FY 2000, in order to permit the Federal Government to continue supporting important cutting-edge research, requiring short-lived isotopes
- Establish a domestic capability to produce a reliable supply of the vital diagnostic isotope molybdenum-99.
- Develop new isotopes for industrial, research and medical applications, including alpha-emitting isotopes; and short-lived accelerator radioisotopes to be used in human clinical trials in FY 2000.

Nuclear Energy Plant Optimization

- Implement a joint strategic plan with industry by developing technologies that will support nuclear plant license renewal and plant optimization as recommended by the President's Committee of Advisors on Science and Technology (PCAST) Panel on Federal Energy Research and Development.

Nuclear Energy Research Initiative

- In FY 1998, the Department will put in place an advisory committee for nuclear energy research which will provide independent expert advice on the implementation of DOE nuclear energy R&D including the NERI program.
- The first NERI awards will be made during the second quarter of FY 1999.
- A two-step review process will be used to select NERI projects and performers: (1) a review of scientific and technical quality and (2) evaluation on the basis of revelance to the DOE mission.

Nuclear Technology R&D

- Complete the demonstration of the electrometallurgical spent fuel treatment technology by June 1999 using Experimental Breeder Reactor-II spent nuclear fuel
- Develop electrometallurgical spent fuel treatment for DOE spent fuel types by the end of FY 1999
- Characterize performance of reference waste forms resulting from electrometallurgical treatment by the end of FY 1999

Uranium Programs

- Monitor the dilution of highly enriched uranium to low enriched uranium from dismantled Russian nuclear weapons for purchase by the United States Enrichment Corporation
- Assure the safety of the stored depleted uranium hexafluoride cylinders and maintain commitments to the Ohio Environmental Protection Agency and the Defense Nuclear Facilities Safety Board

Advanced Radioisotope Power Systems

- Initiate a program in FY 1998 to develop a first set of advanced technology radioisotope thermoelectric generators and initiate fabrication of the first set of generators for delivery by FY 2002 and a set each year thereafter through FY 2006
- Initiate development of highly efficient radioisotope power systems in FY 1998 in support of NASA's future mission requirements
- Beginning in FY 1998, retain, upgrade, and consolidate the facility infrastructure to produce sufficient radioisotope thermoelectric generators to support the program requirements of U.S. government's scientific and national security agencies

University Nuclear Science and Reactor Support

- Slow or reverse the decline in the number of graduates from U.S. nuclear science and engineering programs through grants and fellowships
- Deliver timely shipments of fresh fuel to enable reactor operations to continue unimpeded and remove spent fuel from U.S. university reactors
- Support modernization of university owned research reactors

Test Reactor Area Landlord

- Maintain and upgrade the TRA site and buildings, including fire and life safety improvements

_____ Date _____

Dr. Terry R. Lash
Director, Office of Nuclear Energy, Science and Technology

DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, Narrative in whole dollars)

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY
NUCLEAR ENERGY R&D

PROGRAM MISSION

The mission of the Nuclear Energy Research and Development program is to enhance the safety, economic, and national security interests of the United States, through a focused program of activities that provide R&D support for commercial nuclear power, universities, space and defense missions, and international nuclear safety collaboration.

The GOALS of the Nuclear Energy R&D program are to:

1. Provide compact, safe nuclear power systems and related technologies to space, national security and other customers.

2. Manage DOE nuclear facilities in a safe, environmentally-sound, and cost-effective manner.

3. Address key issues affecting the future of nuclear energy and preserve the Nation’s nuclear science and technology for the next century.

4. Improve U.S. nuclear education infrastructure.

5. Address the technical issues associated with continued operation and optimization of nuclear power plants, and support innovative R&D through a competitive peer review process.

6. Develop technologies needed to meet DOE spent nuclear fuel management and facility shutdown commitments.

The OBJECTIVES related to these goals are:

1. Develop a new advanced, highly efficient radioisotope power system that meets more stringent weight requirements of future space missions and reduces the amount of Pu-238 that is used.

2. Maintain and enhance capability to build advanced radioisotope power supplies for ongoing and future national security applications and NASA space exploration missions.

3. Develop advanced concepts and scientific breakthroughs in nuclear fission and enhance the safety and cost effectiveness of nuclear energy.

4. Provide fuel assistance, fellowship grants, reactor upgrade funding, and other assistance to U.S. universities, in cooperation with industry.

5. Develop a joint strategic plan with industry and DOE laboratories to address issues that may prevent continued operation of existing operating plants and execute the necessary research and development to support long term operation of nuclear power plants.

6. Develop and demonstrate electrometallurgical techniques to be evaluated for application to DOE spent nuclear fuel management needs, including treatment of EBR-II and other DOE sodium-bonded spent nuclear fuels.

PERFORMANCE MEASURES:

1. Develop and provide radioisotope power systems that meet performance requirements of space and national security customers and maintain program operations and capabilities for future missions.

2. Continue to upgrade the physical plant and site infrastructure to ensure safe and reliable operation of Test Reactor Area site facilities.

3. Reverse the decline in the number of nuclear engineering graduates in the U.S.

4. Maintain and strengthen core competencies in U.S. nuclear engineering and health physics programs.

5. Deliver shipments of fresh fuel to university research reactors to enable reactor operations to continue unimpeded.

PERFORMANCE MEASURES: (continued)

6. Provide initial response to university requests for spent fuel assistance within two weeks.

7. Initiate the peer-reviewed Nuclear Energy Research Initiative.

8. In cooperation with the nuclear utility industry, successfully obtain a license renewal of at least one nuclear power plant in the U.S.

9. Develop a nuclear fuel technology to enhance the disposal of waste material and reduce the burden of the U.S. Government for waste material.

10. Develop and evaluate electrometallurgical treatment R&D and demonstration data needed to reach and support, through a NEPA EIS, a DOE decision on future use of the electrometallurgical treatment technology in the management of DOE spent nuclear fuel.

SIGNIFICANT ACCOMPLISHMENTS AND PROGRAM SHIFTS:

1. Develop a new improved RTG needed to support a new national security program and initiate fabrication of components for first RTG.

2. Develop a new advanced radioisotope power system that is lighter and requires less Pu-238 to support future NASA missions.

3. Conduct TRA Fire and Life Safety Improvements.

4. Award fellowships to outstanding and promising M.S. and Ph.D. students engaged in nuclear science research and training, ensuring an adequate supply of trained nuclear personnel.

5. Conclude electrometallurgical treatment R&D, and complete and evaluate the EBR-II spent fuel treatment demonstration.

6. Implement joint strategic plan with industry by developing technologies that will support nuclear plant license renewal and plant optimization.

NUCLEAR ENERGY R&D

PROGRAM FUNDING PROFILE
(Dollars in Thousands)

Sub-program	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Request
Light Water Reactors	$36,993	$0	$0	$0	$0
Advanced Radioisotope Power Systems	36,662	40,500	(466)	40,034	40,500
TRA Landlord	3,000	7,425	(86)	7,339	7,400
ATR Fusion Irradiations	757	0[1]	0	0	0
University Nuclear Science and Reactor Support	4,000	7,000	0	7,000	10,000
Nuclear Energy Plant Optimization	0	0	0	0	10,000
Nuclear Energy Research Initiative	0	0	0	0	24,000
Nuclear Technology R&D	19,475	12,000[2]	0	12,000	25,000
TOTAL, NUCLEAR ENERGY R&D	**$ 100,887**	**$66,925**	**($552)[3]**	**$66,373**	**$116,900**

[1] $2M included in ER Budget
[2] Funded under Defense in FY 1998; Energy Supply in FY 1997 and FY 1999.
[3] Contractor training reduction mandated by House Report language.

NUCLEAR ENERGY R&D

PROGRAM FUNDING BY SITE
(Dollars in Thousands)

Laboratory/Plant/Installation	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Albuquerque Operations Office	$785	$315	$0	$315	$0
Los Alamos National Laboratory	12,971	11,200	(200)	11,000	11,900
Sandia National Laboratory	2,300	200	0	200	500
Chicago Operations Office	18,832	1,150	0	1,150	1,400
Argonne National Laboratory	22,255	11,750	0	11,750	23,837
Ames Laboratory	35	0	0	0	0
Idaho Operations Office	0	4,325	0	4,325	5,350
Idaho National Engineering and Environmental Laboratory	5,807	7,425	(86)	7,339	7,900
Nevada Operations Office	1,235	750	0	750	0
Oakland Operations Office	16,854	5,005	0	5,005	200
Ohio Operations Office	100	30	0	30	0
Mound Plant	6,540	10,350	(141)	10,209	10,750
Oak Ridge Operations Office	13	0	0	0	0
Oak Ridge National Laboratory	4,002	3,450	(125)	3,325	4,950

Laboratory/Plant/Installation	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Oak Ridge Institute of Science and Education	775	925	0	925	1,300
Richland Operations Office	361	65	0	65	125
Pacific Northwest Laboratory	0	0	0	0	0
Savannah River Site	0	950	0	950	900
All Other Site	8,022	9,035	0	9,035	47,788
Foreign	0	0	0	0	0
TOTAL	**$100,887**	**$66,925**	**($552)[1]**	**$66,373**	**$116,900**

[1] Contractor training reduction mandated by House Report language.

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY
CAPITAL OPERATING EXPENSES AND CONSTRUCTION SUMMARY

NUCLEAR ENERGY R&D
($ in Thousands)

Capital Operating Expenses

	FY 1997	FY 1998	FY 1999	$ Change	% Change
Advanced Radioisotope Power Systems	$ 2,123	$ 3,000	$ 3 ,800	$ + 800	+ 26
TRA Landlord	120	93	$ 320	$ + 227	+ 244
SUBTOTAL, Equipment	**$ 2,243**	**$ 3,093**	**$ 4,120**	**$ + 1027**	**+ 33**
GPN-102 General Plant Projects, Test Reactor Area, INEL	$ 450	$ 1,040	$ 1,080	$ + 40	+ 4
General Plant Project, Heat Source Assembly and Test Facility Consolidation Bldg. 50, Mound Plant, Miamisburg, Ohio	$ 0	$ 1,950	$ 0	$ - 1,950	-100
SUBTOTAL, Construction	**$ 450**	**$ 2,990**	**$ 1,080**	**$ - 1,910**	**- 64**

Construction Funded Project Summary

Project Number	Project Title	TEC	FY 1997 Approp.	FY 1998 Request	FY 1999 Approp.	Unapprop. Balance
95-E-201	TRA Fire and Life Safety Improvements, INEL	$ 15,446	$ 1,000	$ 4,425	$ 2,425	$ 5,096
99-E-200	TRA Electrical Utility Upgrade	$ 6,700	$ 0	$ 0	$ 341	$ 6,359

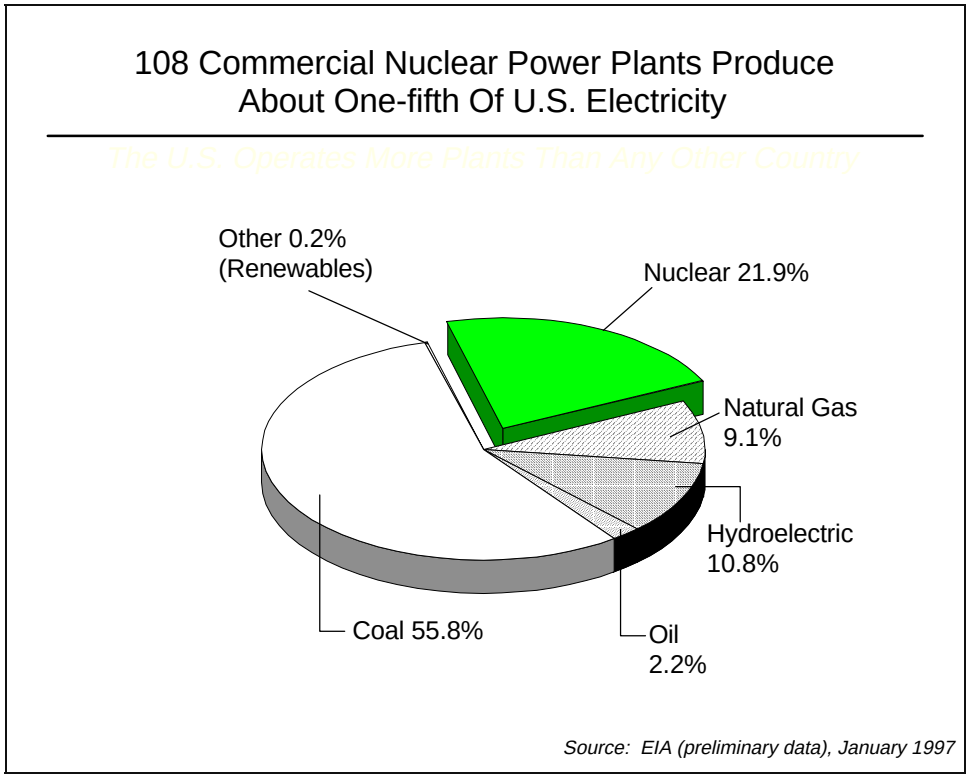
NUCLEAR ENERGY R&D

LIGHT WATER REACTORS
(Dollars in Thousands)

I. Mission Supporting Goals and Objectives

The focus of the Department of Energy's light water reactor nuclear research and development program was to develop technologies to help maintain nuclear power as a viable option for our Nation's future electric production needs. The light water reactor program leveraged the Department's resources with those of the electric utilities, nuclear technology vendors, and other governmental and private participants interested in nuclear technology. Fiscal Year 1997 was the final year of funding for this budget category.

The program achieved most of its major objectives. In May 1997, the Nuclear Regulatory Commission issued design certification for the two evolutionary plants, System 80+ and Advanced Boiling Water Reactor (ABWR). The AP600 passively safe plant design is expected to receive NRC Final Design Approval (FDA) in 1998 with certification to follow approximately one year later. The program was a successful cooperative venture between government and industry in achieving National objectives important to the long-term energy supply of the country.



Fuel Shares of U.S. Electric Generation, 1996

II. Funding Schedule:

Program Activity	FY 1997	FY 1998	FY 1999	$ Change	% Change
Advanced Light Water Reactor	$ 33,314	$0	$0	$0	0
Commercial Light Water Reactor	3,679	0	0	$0	0
TOTAL, Light Water Reactors	**$ 36,993**	**$0**	**$0**	**$0**	**0**

III. Performance Summary:

The former LWR programs were cost-shared among utilities, industry and the Department of Energy and involved both domestic and international participants. These programs provided approximately 1,000 jobs for highly skilled professionals located in 20 states.

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
Advanced Light Water Reactor			
• Conduct/complete FOAKE Program	$17,719	$0	$0
• Conduct/complete Design Certification Program for AP600, ABWR and System 80+ systems and continue other supporting and general technologies	15,595	0	0
• Small Business Innovative Research and Small Business Technology Transfer programs	0[1]	0	0
Total Advanced Light Water Reactor	$33,314	$0	$0
Commercial Light Water Reactor			
• Conduct severe accident research	1,679	0	0
• Conduct plant life improvement program	2,000	0	0
Total Commercial Light Water Reactor	$ 3,679	$0	$0
Total Light Water Reactor	**$36,993**	**$0**	**$0**

[1] In FY 1997 Small Business Innovative Research and Small Business Technology Transfer programs were $999,000. Appropriation has already been reduced accordingly.

EXPLANATION OF FUNDING CHANGES FROM FY 1998 to FY 1999:

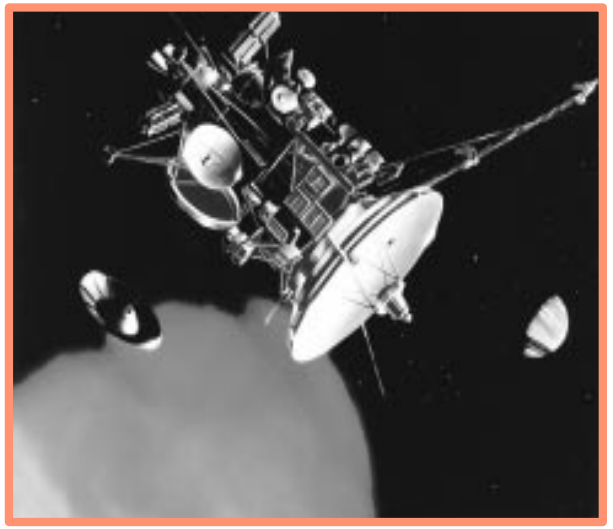
Program Complete.

NUCLEAR ENERGY R&D

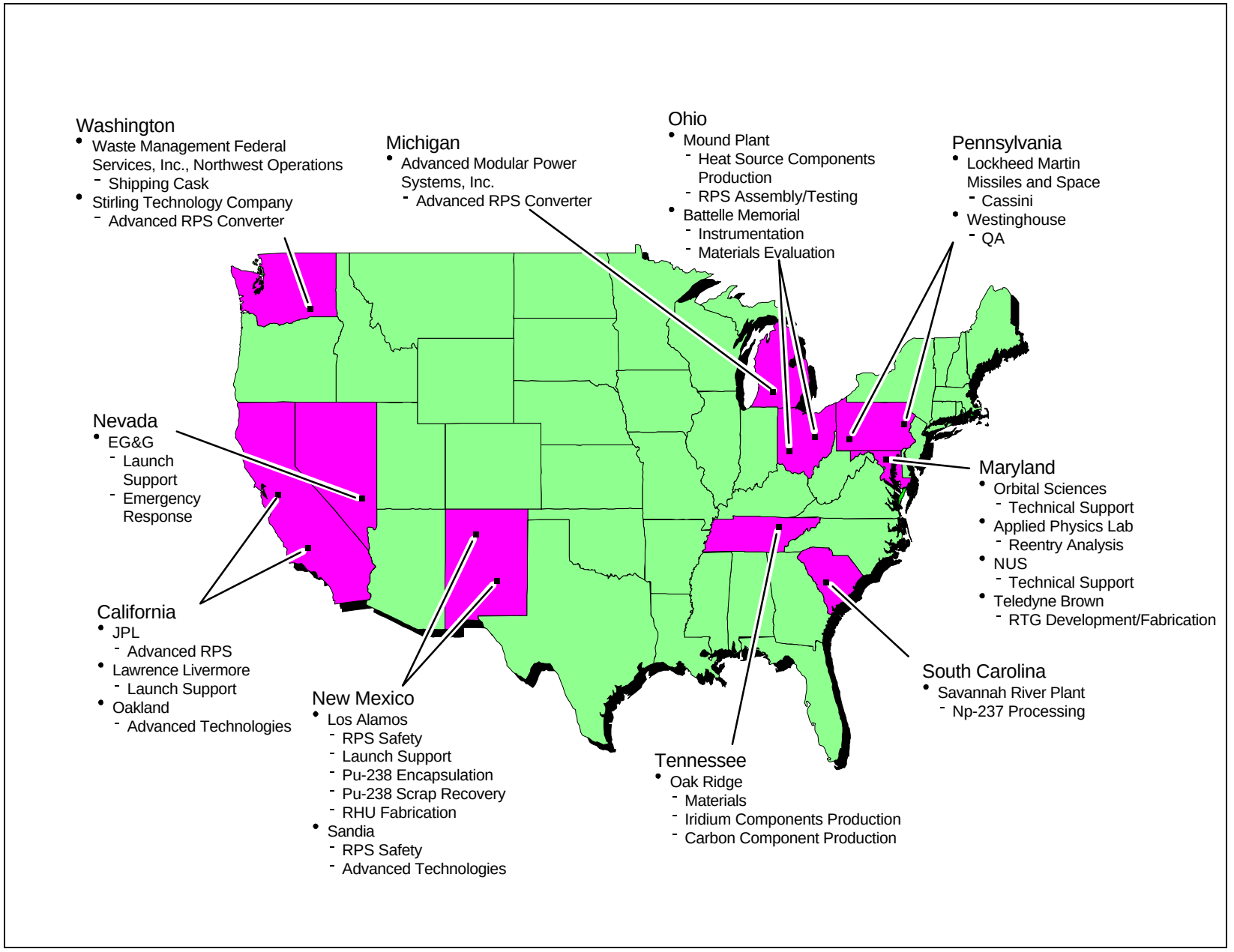
ADVANCED RADIOISOTOPE POWER SYSTEMS
(Dollars in Thousands)

I. Mission Supporting Goals and Objectives:

This activity supports development, demonstration, testing, and delivery of radioisotope power systems. (See map on next page for participating laboratories and contractors.) Radioisotope power systems (RPS) are the enabling technology for space and terrestrial applications requiring proven, reliable and maintenance-free power supplies capable of producing up to several kilowatts of power and operating under severe environmental conditions for many years. Previous missions that have used radioisotope power systems include the Apollo lunar surface scientific packages, and Pioneer, Viking, Voyager, Galileo, and Ulysses spacecrafts.

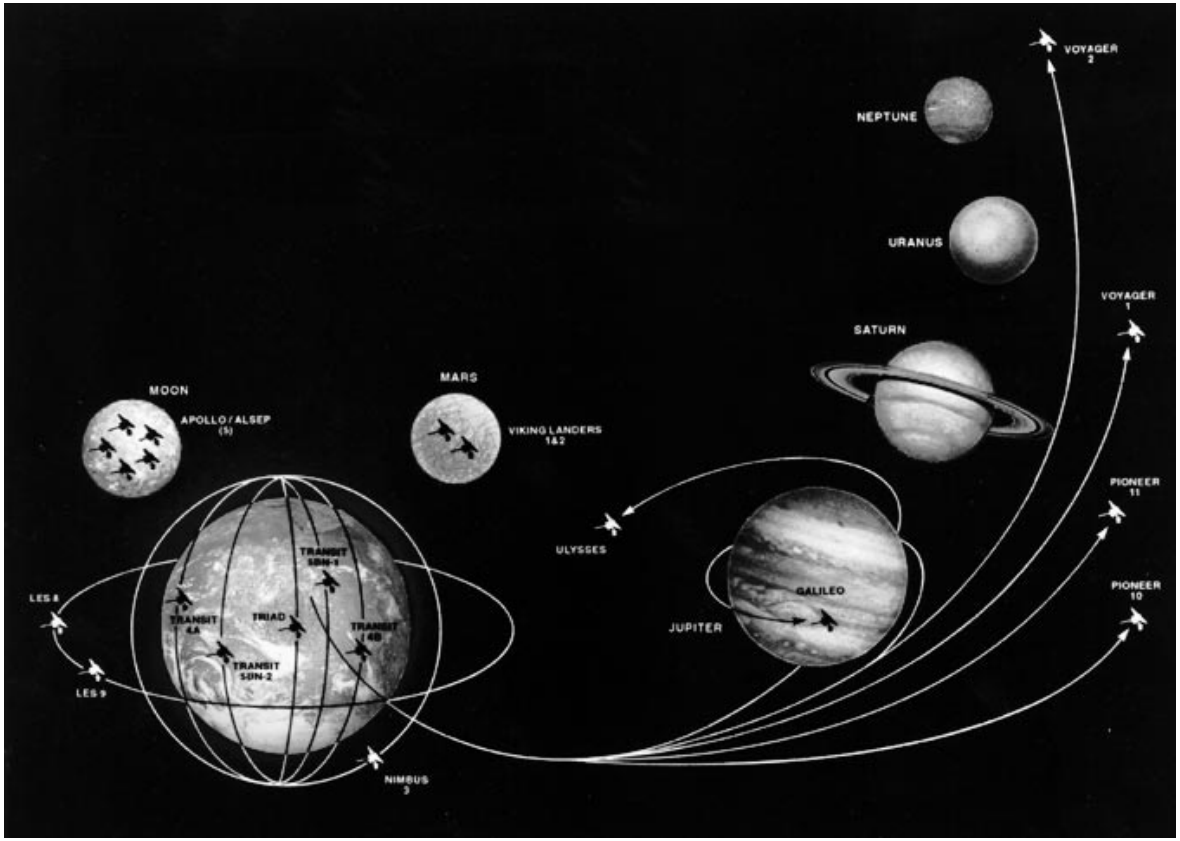


Program emphasis through early FY 1998 has been on fabricating and delivering to NASA three new Radioisotope Thermoelectric Generators (RTGs) and 157 heater units for the Cassini mission, on supporting NASA in obtaining approval to launch Cassini, on implementing emergency preparedness plans and operations for the Cassini launch which occurred on October 15, 1997, and on supporting ongoing national security missions. In FY 1998 program emphasis transitioned from Cassini specific efforts to maintaining the facilities and expertise that is required to produce radioisotope power systems and to supporting ongoing national security missions and the following two new missions: 1) developing and testing an advanced power system for future NASA missions, such as the Europa Ocean Explorer or Pluto Express missions that will occur after the turn of the century; 2) a new national security mission which will require delivery of several RTGs over the next decade. In FY 1999 the program will continue the emphasis on maintaining the capability and on supporting the two new missions, as well as the ongoing national security applications. Fabrication of a test model of an advanced, more efficient power system for future NASA missions will be completed and the model put on life testing. Development of an improved, more efficient thermoelectric element will be completed and fabrication of the components for the first RTG for the new national security mission will be initiated in FY 1999.



Advanced Radioisotope Power Systems (RPS) -- Primary Participants

In FY 1999, the program will continue developing new, state-of-the-art power supplies required to support both future NASA space missions, such as could be used on survey missions to Mars or Europa, as well as the national security applications. This includes development of advanced technologies, new materials, new heat sources, and new converter technologies. The outyear planning for these future missions reflects arrangements with the national security users, NASA, and DOD to ensure the capabilities of the facility infrastructure to produce radioisotope power systems. This infrastructure represents the sole national capability to produce radioisotope power systems. Without these systems, critical national security activities and NASA missions to explore deep space and the surfaces of neighboring planets would not occur. In accordance with arrangements with our customer agencies, NASA (or other users) will provide funds to the Department to pay for mission specific costs (including mission specific development, hardware fabrication, preparation of safety analysis reports, and other mission support costs). NASA will also purchase any new Pu-238 required to support its science missions until a domestic production source is established.



RTG Powered Spacecraft

Deep space probes that relied on Department manufactured power sources.

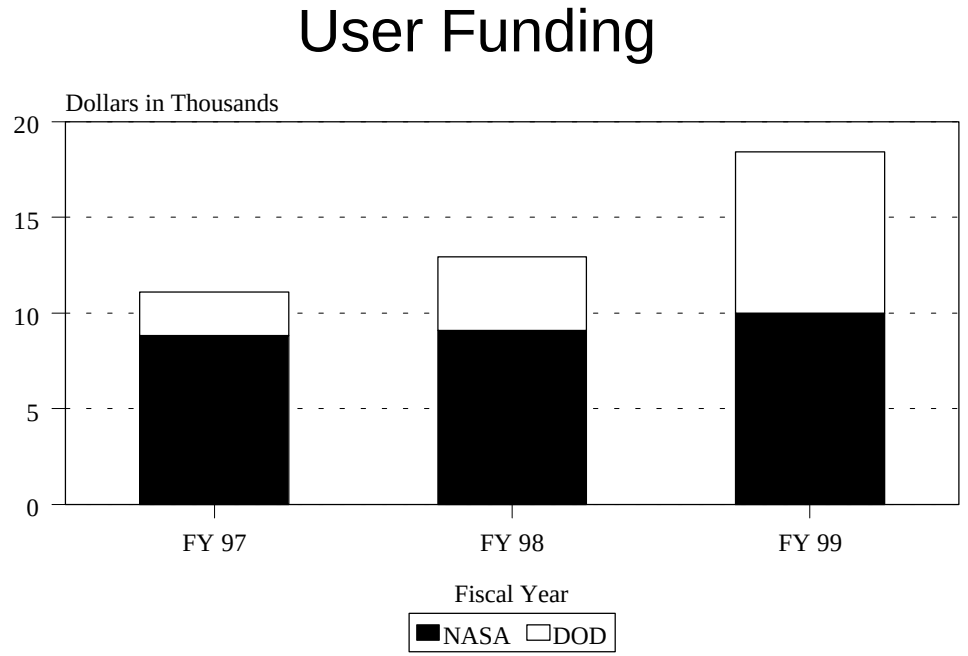
Cleanup of the Defense Programs portion of the Mound site is to be completed by 2005. Since the radioisotope power system program relies on services and use of facilities that will no longer be available, a plan was developed to consolidate operations in a few dedicated facilities and provide for stand-alone operations. In FY 1998, a study will be completed on whether it is more economically

advantageous to proceed with this plan to consolidate the radioisotope power system program facilities for stand-alone operations at Mound or to transfer operations to another site. A decision will be made in FY 1998 either to proceed with the consolidation at Mound or to initiate activities to transfer these operations to another site.

In FY 1999, the program will continue to develop the capability at Los Alamos National Laboratory to recycle Pu-238 scrap for reuse for future missions. Procurement of gloveboxes and process equipment will be completed and installation of recycle lines will be initiated. These capabilities should be operational by the end of FY 2000. Evaluation, development and implementation of options for meeting near-term and long-term supply needs of Pu-238 will continue. These options include, but are not limited to, the establishment of a processing facility and use of existing DOE reactors for the domestic production of Pu-238. The budget request reflects a proposed, more flexible policy under which future foreign purchases of Pu-238 could be made using funding provided either by NASA or the Department.

II. Funding Schedule:

Program Activity	FY 1997	FY 1998	FY 1999	$ Change	% Change
Radioisotope Power Systems	$ 33,762	$33,009	$32,700	$ -309	-1
Special Applications	1,600	2,000	2,000	0	0
Plutonium-238 Acquisition and Processing	1,300	5,025	5,800	+775	+15
TOTAL, Advanced Radioisotope Power Systems	**$36,662**	**$40,034[1]**	**$40,500**	**$+466**	**+1**



[1] Reflects a reduction for contractor training mandated by House Report language.

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
Radioisotope Power Systems			
• Provide RTGs that satisfy NASA power requirements for the Cassini mission and support Cassini launch.	$15,510	$4,150	$0
• Continue program with industry, universities and laboratories to develop advanced technologies (converters, materials) for use in power systems for future NASA missions. Demonstrate use of a light weight, highly efficient converter technology for use in a power system for a space or terrestrial mission.	$402	$2,597	$4,421
• Maintain program facility operations and capabilities for current and future space and national security missions. Prepare facility operations for conduct of new NASA space missions and the new national security missions.	$17,850	$24,185	$27,420
• Continue facility modifications to allow consolidation of heat source and RTG assembly operations into a single facility at the Mound Plant or initiate transfer of Mound operations to a more economically advantageous site.	0	1,950	700
• Small Business Innovative Research and Small Business Technology Transfer programs	$0[1]	127	159
Total Radioisotope Power Systems	$33,762	$33,009	$32,700
Special Applications			
• Satisfy user requirements to support ongoing and new national security programs.	$1,600	$2,000	$2,000
Total, Special Applications	$1,600	$2,000	$2,000

[1] In FY 1997 Small Business Innovative Research and Small Business Technology Transfer programs were $100,000. Appropriation has already been reduced accordingly.

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
Plutonium-238 Acquisition and Processing			
• Develop scrap recovery capability at Los Alamos National Laboratory for reuse of Pu-238 for future national security and NASA space missions.	$200	$3,200	$3,100
• Evaluate options for meeting near-term and long-term supply needs for Pu-238.	$1,100	$1,825	$2,700
Total, Plutonium-238 Acquisition and Processing	$1,300	$5,025	$5,800
Total, Advanced Radioisotope Power Systems	**$36,662**	**$40,034[1]**	**$40,500**

EXPLANATION OF FUNDING CHANGES FROM FY 1998 TO FY 1999:

Funding changes from FY 1998 to FY 1999 are minor and are due to routine program developments.

[1] Reflects a reduction for contractor training mandated by House Report language.

NUCLEAR ENERGY R&D

UNIVERSITY NUCLEAR SCIENCE AND REACTOR SUPPORT
(Dollars in Thousands)

I. Mission Supporting Goals and Objectives:

In order to maintain the capability in the U. S. to conduct research, address pressing environmental challenges, and help preserve the nuclear energy option, the educating and training of personnel in nuclear sciences and technology is vital. Our universities and university research reactors play a major role in providing this education and training.

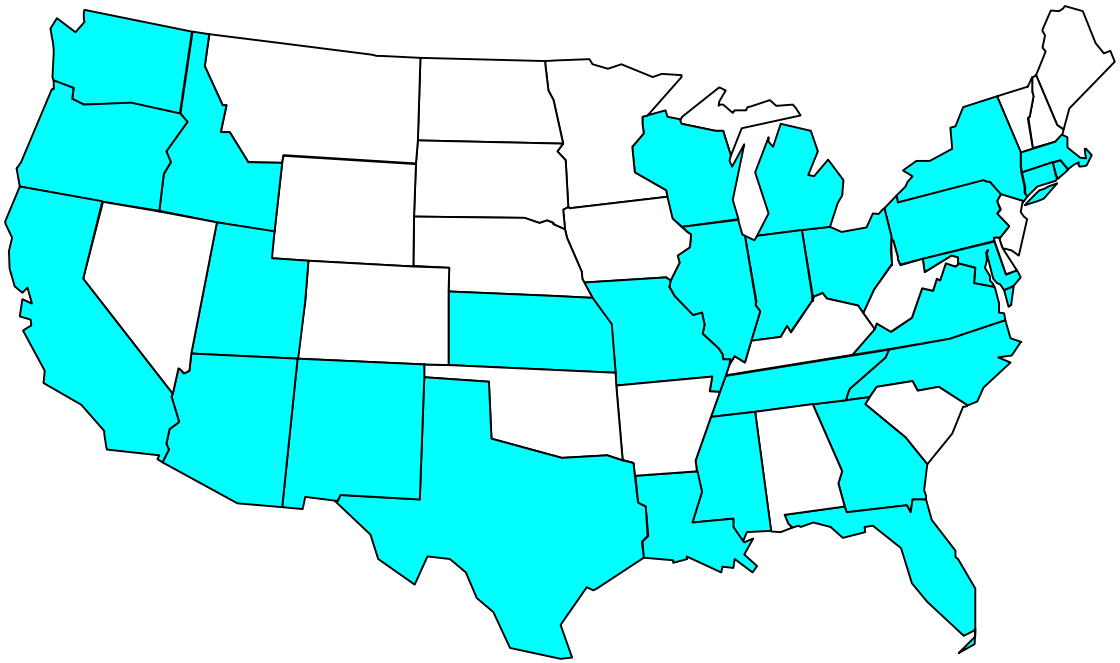
University research reactors in the United States form a fundamental and vital component in a broad spectrum of our national research and education infrastructure critical to many national priorities such as health care, education, environment and technology transfer. Currently, there are 31 operating university research reactors on 29 campuses in 24 states. University reactors are the source of neutrons for research in such diverse areas as medical isotopes, human health, life sciences, environmental protection, advanced materials, nuclear pumped lasers, energy conversion and food science. University research reactors provide highly qualified, technically knowledgeable personnel needed by national laboratories, the federal government, academia, and private industry for basic and applied research critical to U.S. technological competitiveness. They are centers of multi disciplinary research efforts in the fields of chemistry, biology, medicine, epidemiology, archeology, environmental sciences, material sciences, fluid mechanics, geology, energy production and many other areas. University research reactors are used for laboratory instruction in all these fields with emphasis on radiation measurement, reactor science and engineering, and applications of radiological techniques. Many of the reactors serve as centers for pre-college education programs offered for high school students and teachers who come to the reactor for instructional programs and research. This pre-college exposure to nuclear science and technology is an important component in maintaining the vitality of nuclear engineering education in the United States. University research reactors also contribute to the educational base of future scientists and engineers in the above mentioned broad range of disciplines that use reactor based techniques to solve unique problems.

The University Nuclear Science and Reactor Support program provides funding for activities that benefit science education at the U.S. colleges and universities listed below, with emphasis on nuclear science and technology. These activities include: supplying fresh fuel to university reactors; allowing students and faculty at universities that do not operate nuclear reactors to have access to university reactors for research and training through the Reactor Sharing Program; partnering with private companies in funding university nuclear engineering programs through the Matching Grants Program; supporting university reactor maintenance and upgrades to ensure that these valuable educational and research tools are available into the next decade; providing fellowships to outstanding

Masters of Science and Doctor of Philosophy students and scholarships to undergraduate students to help ensure that our country will have an adequate supply of trained nuclear scientists and engineers; and supporting science education at minority institutions by sponsoring fellowships, cooperative education programs with students, a professorship, and research support. This includes the Department's sponsorship of the Ernest J. Wilkins, Jr. Chair of Excellence professorship at Morgan State University. This program also supports the conversion of university reactors that use highly enriched uranium fuel to low enriched uranium fuel, as required by 10 CFR 50.64.

A significant increase over the FY 1998 appropriation for this program is required for several reasons. The Department has planned since FY 1996 to initiate a program to assist in the maintenance and upgrade of experimental capabilities at university research reactors, and began a program to accomplish this objective last year with a modest level of funding. The FY 1999 request includes funding for a growing list of maintenance and upgrade items as well as assistance with life cycle cost issues. Also, the FY 1999 request will provide for a substantial increase in the Nuclear Engineering Education Research Grants program that was reestablished in FY 1998 at the recommendation of the FY 1997 House/Senate Appropriations Conference Committee. The FY 1999 request will allow the Department to fund these activities as well as faculty support in the increasingly important area of radiochemistry and pre-college educational activities to support U.S. schools in the development of energy-related instruction.

States With Participating Universities



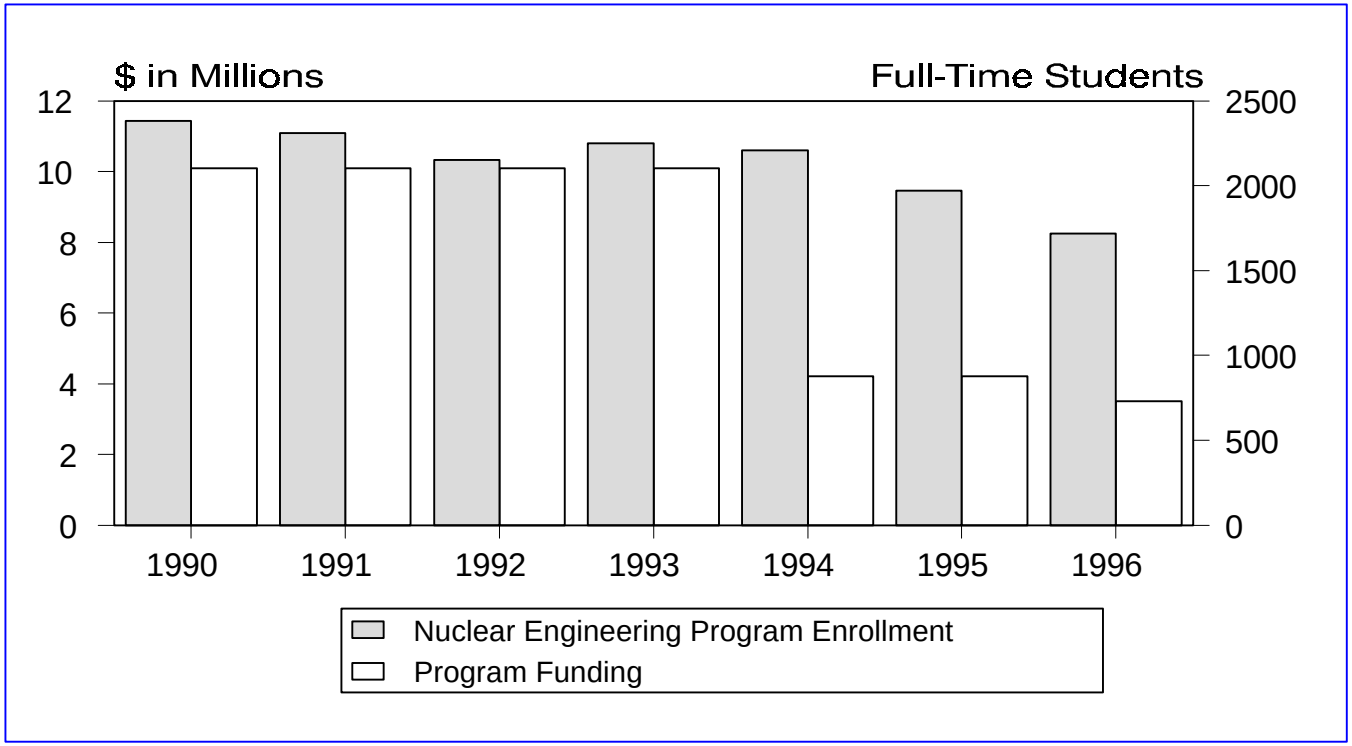
Program Participants

Note: Shaded states indicate states with participating universities.

Cornell University
Georgia Institute of Technology
Howard University
Idaho State University
Jackson State University
Kansas State University
Lincoln University
Massachusetts Institute of Technology
Morgan State University
Morris College
North Carolina State University
North Carolina AT&T State Universtiy
North Carolina Central University
Ohio State University
Oregon State University
Pennsylvania State University
Prairie View A&M University
Purdue University
Reed College
Rensselaer Polytechnic Institute
Rhode Island Nuclear Science Center
Tennessee State University
Texas A&M University
University of Arizona
University of California-Berkeley
University of California-Irvine
University of California-Los Angeles
University of Cincinnati
University of Florida
University of Illinois
University of Maryland
University of Massachusetts-Lowell
University of Michigan
University of Missouri-Columbia
University of Missouri-Rolla
University of New Mexico
University of Tennessee
University of Texas
University of Utah
University of Virginia
University of Wisconsin
Virginia State University
Washington State University
Worcester Polytechnic Institute
Xavier University of Louisiana

II. Funding Schedule:

Program Activity	FY 1997	FY 1998	FY 1999	$ Change	% Change
University Nuclear Science and Reactor Support	$4,000	$7,000	$10,000	+$3,000	43



Enrollment in nuclear engineering programs has declined by nearly 25% since 1993, as Federal support for these programs has been cut.

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
University Nuclear Science and Reactor Support			
• Supply fresh fuel to and ship spent fuel from multiple university reactors and, if possible, begin conversion of a university reactor from high enriched uranium to low enriched uranium.	$2,000	$2,100	$2,300
• Continue the Matching Grants Program, which supports education, training, and innovative research at participating universities. Provide grants of up to $50,000 to as many as 19 universities in FY 1998 and FY 1999, which will be matched by industry. An evaluation of the five year trial of the matching grants program conducted in FY 1997 recommended continuation and expansion of the program beginning in FY 1998.	$700	$800	$900
• Provide fellowships for outstanding and promising United States M.S. and Ph.D. students engaged in nuclear science research and training at multiple U.S. universities and scholarships to undergraduate students who desire to pursue a nuclear engineering course of study. Twelve fellowships were provided in FY 1997, sixteen are planned for FY 1998 along with 35 scholarships, and approximately 20 fellowships and 40 scholarships are planned for FY 1999.	$500	$600	$800
• Support nuclear engineering faculty positions at three Historically Black Colleges and Universities (HBCUs), such as Morgan State University. Provide support to approximately 27 outstanding undergraduate and graduate level students pursuing degrees in scientific or technical fields at HBCUs. Promote the advancement of science and technical education at Hispanic Serving Institutions through direct support.	$400	$500	$600
• Continue the Reactor Sharing Grants program. This program allows students and faculty at institutions without reactors to have access to university reactors for training, education, and research purposes. This program also allows the universities with reactors to conduct educational outreach programs in their local communities.	$400	$500	$700

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
• Continue with the second year of the reactor upgrade program to assist in addressing the backlog of maintenance and upgrade of items confronting university-owned research reactors. The program provides for replacement of outdated equipment, maintenance of reactor systems, and upgrading of experimental capabilities at U.S. university reactors. The purpose of this program is to ensure that these valuable educational and research tools are available into the next decade.	$0	$300	$1,000
• Expand the Nuclear Engineering Education Research Grants Program, which was recommended for reinstatement by the FY 1997 House/Senate Appropriation Conference Committee.	$0	$2,200	$3,000
• Begin a program to support U.S. schools in instructing pre-college students in subjects related to nuclear science and technology.	$0	$0	$200
• Faculty support to help educate a new generation of radiochemists to address the radiochemistry issues associated with radioactive wastes and contaminated sites.	$0	$0	$500
Total University Nuclear Science and Reactor Support	**$4,000**	**$7,000**	**$10,000**

EXPLANATION OF FUNDING CHANGES FROM FY 1998 TO FY 1999:

• Begin conversion of a university research reactor from high enriched uranium to low enriched uranium.	+$200
• Increase the number of Matching Grants at U.S. universities by approximately 3.	+$100
• Increase Nuclear Engineering and Health Physics fellowships by approximately 2.	+$200
• Expand efforts to help improve science and engineering education at HBCUs and Hispanic Serving Institutions.	+$100
• Increase Reactor Sharing program to broaden access to reactors for research and training by students and faculty from universities without such facilities.	+$200
• Expand the program to assist in the maintenance and upgrading of university-owned research reactors.	+$700

EXPLANATION OF FUNDING CHANGES FROM FY 1998 TO FY 1999: (continued)

• Expand the recently reinstated Nuclear Engineering Education Research Grants program to universities conducting innovative research in nuclear technologies.	+$800
• Begin a program to support U.S. schools in instructing pre-college students in subjects related to nuclear science and technology.	+200
• Initiate efforts in radiochemistry faculty support.	+500
Total Funding Changes, University Nuclear Science and Reactor Support	+3,000

NUCLEAR ENERGY R&D

TRA LANDLORD
(Dollars in Thousands)

I. Mission Supporting Goals and Objectives:

The Idaho Test Reactor Area (TRA) is located within the Idaho National Engineering and Environmental Laboratory (INEEL). Since the early 1950s, test reactors, laboratories, hot cells and supporting facilities have been built and operated there. Currently operating on site are the Advanced Test Reactor (ATR), the ATR Critical Facility, the TRA Hot Cells and the INEEL Applied Engineering and Development Laboratories. Vital nuclear reactor testing, isotope production and other scientific research are planned to continue at TRA until well into the twenty-first century. TRA Landlord activities include operating support, cleanup of legacy waste, General Purpose Capital Equipment procurement, General Plant Projects (GPP), and Line Item Construction Projects (LICP) to ensure the safety, reliability and environmental compliance of TRA site facilities. The FY 1999 budget provides for improvements in fire safety for the TRA site to meet current Federal, State and Department of Energy (DOE) fire safety standards. The principal fire safety improvement in FY 1999 will be the completion of installation of a redundant water supply system required to meet current minimum DOE fire protection standards for a site such as TRA. The FY 1999 budget will also provide for the start of a Line Item Construction Project to upgrade the aging site electrical utility system.

II. Funding Schedule:

Program Activity	FY 1997	FY 1998	FY 1999	$ Change	% Change
TRA Landlord	$3,000	$7,339	$7,400	$+61	+1
Total, TRA Landlord	**$3,000**	**$7,339[1]**	**$7,400**	**$+61**	**+1**

[1] Reflects a reduction for contractor training mandated by House Report language.

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
TRA Landlord			
• Provide LICP and GPP planning, development, design, project validation and construction management; continue the correction of facility ES&H deficiencies identified during facility inspections, self-assessments and operational inspections to ensure that TRA Landlord facilities are maintained in compliance with programmatic, safety and health, and environmental requirements; and continue self-assessment activities to provide TRA Landlord management with the maintenance status, safety condition and environmental compliance status of TRA Landlord facilities.	$1,430	$1,425	$1,510
• Ensure TRA Landlord Environmental Compliance. Remediate identified legacy waste to ensure compliance with state and federal environmental statutes.	0	425	1,724
• Continue to purchase General Purpose Capital Equipment (GPCE) to support TRA Landlord functions.	120	90	320
• Conduct GPPs required to maintain the site and buildings to meet programmatic requirements in a safe and environmentally sound manner. GPPs include such improvements as the TRA Low Level Waste Retention System Upgrade.	450	974	1,080
• Continue construction phase of the TRA Fire and Life Safety LICP including: (1) completion of installation of a completely redundant water supply consisting of approved fire pumps and a storage tank that meets current requirements and (2) accomplishment of other planned miscellaneous fire and life safety upgrade items across the site.	1,000	4,425	2,425

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
• Initiate the TRA Electrical Utility Upgrade LICP which will provide for the design, procurement and construction activities to correct specific electrical distribution system reliability and safety deficiencies resulting from equipment age and deterioration, and to address approved new requirements in system configuration, load capacity and standby power.	0	0	341
Total TRA Landlord	**$3,000**	**$7,339[1]**	**$7,400**

EXPLANATION OF FUNDING CHANGES FROM FY 1998 TO FY 1999:

• Increased funding for General Purpose Capital Equipment, legacy waste remediation and operations support required to maintain the site and facilities in a safe and environmentally sound manner.	$+1,720
• Reduction in the Fire and Life Safety Line Item Construction Project.	$-2,000
• Addition of new LICP for TRA Electrical Utility Upgrade.	$+341
Total Funding Change, TRA Landlord	$+61

[1] Reflects a reduction for contractor training mandated by House Report language.

DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT

CONSTRUCTION PROJECT DATA SHEET
TRA LANDLORD
(Tabular dollars in thousands. Narrative material in whole dollars.)

1.	Title and Location of Project: TRA Electrical Utility Upgrade Idaho National Engineering & Environmental Laboratory, Idaho	2a.	Project No.: 99-E-200
		2b.	Construction Funded
3a.	Date A-E Work Initiated: 2nd Qtr. FY 1999	5.	Previous Cost Estimate: Total Estimated Cost (TEC): $6,700
3b.	A-E Work (Title I & II) Duration: 14 months		Total Project Cost (TPC): $7,320
4a.	Date Physical Construction Starts: 3rd Qtr. FY 2000	6.	Current Cost Estimate: TEC -- $ 6,700
4b.	Date Construction Ends: 3rd Qtr. FY 2002		TPC -- $ 7,320

7. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligation	Costs
1999	$341	$0	$341	$341
2000	$4,685	$0	$4,685	$1,362
2001	$1,045	$0	$1,045	$3,629
2002	$629	$0	$629	$1,368

1.	Title and Location of Project:	TRA Electrical Utility Upgrade Idaho National Engineering & Environmental Laboratory, Idaho	2a. 2b.	Project No.: 99-E-200 Construction Funded

8 Brief Physical Description of Project:

The Test Reactor Area (TRA) was established in the early 1950 s with the development of the Materials Test Reactor. Two other major test reactors followed. The electrical distribution system supplying power to these programs included 13.8kV and 2400 volt equipment. Over the past 40 years, the electrical distribution system has been modified many times to accommodate operating requirements of the users.

The TRA Electrical Upgrade Project provides for the design, procurement, and construction activities to correct specific electrical deficiencies in the 13.8kV and 5kV class equipment at the TRA. The scope addresses:

a) Increased reliability by replacement of 30 to 40 year old switchgear, transformers, and panelboards.
b) Modification of the standby power system and elimination of redundant battery banks and associated equipment.
c) Consolidation and reconfiguration of the electrical distribution system to avoid safety hazards while considering provisions for future expansion.
d) Simplification of switchgear use by utilizing common voltages.
e) Reconfiguration to allow preparation for demolition of facilities.
f) Abatement of hazards, including electrical shock.

1.	Title and Location of Project:	TRA Electrical Utility Upgrade Idaho National Engineering & Environmental Laboratory, Idaho	2a. 2b.	Project No.: 99-E-200 Construction Funded

9. Purpose, Justification of Need For, and Scope of Project:

This project proposes to upgrade portions of the TRA electrical distribution system to address deterioration, configuration, load requirements, and standby power requirements. The upgrades will result in a reliable and maintainable electrical distribution system that meets the needs of the user. Voltages addressed in the workscope include 13.8kV down to 480 volt equipment (in some instances). The scope of this project is not to correct all code and standards deficiencies.

Since the 1950's, when electrical distribution equipment was first being installed at TRA, numerous modifications to the system have been accomplished. These modifications, while providing immediate solutions to specific problems, did not always address optimum system operation. The cumulative effect of changes over time and the deterioration of the system with age has resulted in decreased reliability and maintainability. Changing user requirements have resulted in potential safety concerns such as overloading of equipment. This project addresses usage, configuration, and deterioration of the electrical system.

The project scope typically includes, but is not limited to replacement of selected switchgear and facility transformers, modifications to electrical services and panels, construction of underground ductbanks, replacement of power cables and control wiring, and modifications to instrumentation and control equipment.

The conceptual design has identified major items of scope, however, additional deficiencies identified during studies and design efforts will be prioritized and included in this project as funding allows.

1.	Title and Location of Project:	TRA Electrical Utility Upgrade Idaho National Engineering & Environmental Laboratory, Idaho	2a. 2b.	Project No.: 99-E-200 Construction Funded

10. Details of Cost Estimate:	Item Cost	Total Cost
a. Design and Management Costs		$1,689
(1) Engineering design and inspection at approximately 17 percent of construction costs, Item c,d (Design, Drawings, and Specifications $391):	631	
(2) Construction management	387	
(3) Project administration	671	
b. Land and land rights		0
c. Construction costs		3,692
(1) Improvements to land	0	
(2) Buildings	0	
(3) Other structures	0	
(4) Utilities (Electrical distribution equipment upgrades)	3,692	
(5) Special facilities	0	
d. Standard equipment		0
e. Major computer items		0
f. Removal cost less salvage		0
g. Design and project liaison, testing, checkout and acceptance		0
h. Subtotal		5,381
i. Contingency at 24.5 percent above cost		1,319
j. Total line item cost (Section 12.a. 1(a))		6,700
k. Non-Federal Contribution		0
l. Net Federal total estimated cost (TEC)		$6,700

1.	Title and Location of Project:	TRA Electrical Utility Upgrade Idaho National Engineering & Environmental Laboratory, Idaho	2a. 2b.	Project No.: 99-E-200 Construction Funded

11. Method of Performance:

Project Management, Design, Inspection and Construction Management will be performed by the operating contractor. Construction will be performed under subcontract awarded on the basis of competitive bidding. No government furnished equipment is anticipated.

12. Schedule of Project Funding and Other Related Funding Requirements:

a Total facility costs	Prior Years	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total
(1) Total Facility Costs									
(a) Line item (Section)	$0	$0	$0	$341	$1,362	$3,629	$1,368	$0	$6,700
(b) Oper Exp. Funded Equipment	0	0	0	0	0	0	0	0	0
(c) Inventories	0	0	0	0	0	0	0	0	0
Total Facility costs (Federal and Non-Federal)	$0	$0	$0	$341	$1,362	$3,629	$1,368	$0	$6,700
(2) Other Project costs									
(a) R&D Necessary to complete	0	0	0	0	0	0	0	0	0
(b) Conceptual design costs	0	101	0	0	0	0	0	0	101
(c) Decontamination & Decommissioning	0	0	0	0	0	0	0	0	0
(d) NEPA Documentation costs	0	4	0	0	0	0	0	0	4
(e) Other project-related costs	0	6	71	23	66	169	180	0	515
Total other project costs	$0	$111	$71	$23	$66	$169	$180	$0	$620
(f) Non Federal Contribution	0	0	0	0	0	0	0	0	0
Net Federal Total Project Costs	$0	$111	$71	$23	$66	$169	$180	$0	$7,320

1.	Title and Location of Project:	TRA Electrical Utility Upgrade Idaho National Engineering & Environmental Laboratory, Idaho	2a. 2b.	Project No.: 99-E-200 Construction Funded

12. Schedule of Project Funding and Other Related Funding Requirements: (continued)

b. Related Annual Costs

1.	Total facility operating costs	$0
2.	Facility maintenance and repair costs	0
3.	Programmatic operating expenses directly related to the facility	0
4.	Capital equipment not related to construction but related to the programmatic effort in the facility	0
5.	GPP or other construction related to the programmatic effort in the facility	0
6.	Utility costs	0
7.	Other costs	0
	Total related annual funding	$0

DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT

CONSTRUCTION PROJECT DATA SHEET
TRA LANDLORD
(Tabular dollars in thousands. Narrative material in whole dollars.)

1.	Title and Location of Project: TRA Fire and Life Safety Improvements Idaho National Engineering & Environmental Laboratory, Idaho	2a.	Project No.: 95-E-201
		2b.	Construction Funded
3a.	Date A-E Work Initiated: 2nd Qtr. FY 1995	5.	Previous Cost Estimate: Total Estimated Cost (TEC): $15,446
3b.	A-E Work (Title I & II) Duration: 21 months		Total Project Cost (TPC): $17,011
4a.	Date Physical Construction Starts: 3rd Qtr. FY 1995	6.	Current Cost Estimate: TEC -- $ 15,446
4b.	Date Construction Ends: 4th Qtr. FY 2000		TPC -- $ 17,011

7. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligation	Costs
1995	$1,696	$0	$1,696	$1,130
1996	$1,900	$0	$1,900	$1,545
1997	$1,000	$0	$1,000	$1,686
1998	$4,425	$0	$4,425	$3,255
1999	$2,425	$0	$2,425	$3,830
2000	$1,500	$0	$1,500	$1,500
2001	$2,500	$0	$2,500	$2,500

1.	Title and Location of Project:	TRA Fire and Life Safety Improvements Idaho National Engineering & Environmental Laboratory, Idaho	2a. 2b.	Project No.: 95-E-201 Construction Funded

8 Project Description, Justification, and Scope:

The Test Reactor Area (TRA) Fire and Safety Improvements project provides for the design, procurement, and construction activities to correct fire protection and life safety code deficiencies at the TRA. Corrections consist of:

a) Modifications to or replacement of deficient fire barriers to meet code and reduce Maximum Possible Fire Loss (MPFL) orsmoke damage impacts to property and personnel.

b) Additions, modifications, or new automatic fire suppression systems to meet code requirements for operations personnel life safety and to reduce Maximum Credible Fire Loss (MCFL) potentials to acceptable improved risk levels as required by DOE Order 5480.7.

c) Additions or modifications to existing building heating and ventilating systems to control fire and smoke spread, upgrades or replacement of interior doors to provide smoke and fire barriers, protection of structural support members, and sealing of penetrations in fire barriers (existing walls and floors) to provide effective control of property damage and life safety protection.

d) Modifications and expansions of the fire detection and alarm system and removal of obsolete equipment to meet codes, site-wide system compatibility, monitoring and life safety requirements.

e) Addition of fully redundant water supply, consisting of new UL-listed and FM-approved fire pumps and a tank capable of delivering 100 percent of the highest demand for volume, pressure, and duration to meet reliability requirements of DOE Order 5480.7.

1.	Title and Location of Project:	TRA Fire and Life Safety Improvements Idaho National Engineering & Environmental Laboratory, Idaho	2a. 2b.	Project No.: 95-E-201 Construction Funded

8 Project Description, Justification, and Scope: (continued)

This project provides for design, procurement, and construction activities to correct fire protection and life safety code deficiencies at the TRA. Fire protection is a part of the Idaho National Engineering Laboratory (INEEL) site-wide safety program to provide a safe working and operating environment. The corrections to be provided by the project are required to bring systems and facilities into compliance with fire and life safety requirements of the DOE regulations and national codes and standards. Numerous fire protection and life safety deficiencies have been identified during the current and ongoing appraisals conducted by DOE-Idaho Operations Office and Lockheed Martin Idaho Technologies contractor fire protection personnel.

Buildings constructed prior to current National Fire Protection Agency (NFPA), Uniform Building Code (UBC), and Life Safety Codes and Standards require upgrades to provide fire suppression systems, fire walls in corridors, stairwells, new exits and upgrades to existing exits, installation of fire separation walls and smoke dampers, and installation of new and upgrade of existing fire alarm and detection systems.

Modifications and upgrades to existing fire protection systems, installation of new systems, and upgrades to existing facilities will bring occupied TRA facilities in compliance with national codes and standards and DOE regulations.

1.	Title and Location of Project:	TRA Fire and Life Safety Improvements Idaho National Engineering & Environmental Laboratory, Idaho	2a. 2b.	Project No.: 95-E-201 Construction Funded

9. Details of Cost Estimate:	Item Cost	Total Cost
a. Design and Management Costs		$4,645
(1) Engineering design and inspection at approximately 19 percent of construction costs, Item c,d (Design, Drawings, and Specifications $830).:	1,655	
(2) Construction management	1,420	
(3) Project administration	1,570	
b. Land and land rights		0
c. Construction costs		8,710
(1) Improvements to land (Grading, paving, and drainage)	110	
(2) Buildings (New Pump House and modificaitons to a number of existing facilities)	4,500	
(3) Other structures (New 1,000,000 gal Water Storage Tank)	1,600	
(4) Utilities (Fire Water Lines and Power for and alarms for new/existing buildings and structures)	2,500	
(5) Special facilities	0	
d. Standard equipment		11
e. Major computer items		0
f. Removal costs less salvage		0
f. Design and project liaison, testing, checkout and acceptance		0
h. Subtotal		13,366
i. Contingencies at 16 percent above costs		2,080
j. Total line item cost (Section 12.a. 1(a))		15,446
k. Non-Federal Contribution		0
l. Net Federal total estimated cost (TEC)		$15,446

1.	Title and Location of Project:	TRA Fire and Life Safety Improvements Idaho National Engineering & Environmental Laboratory, Idaho	2a. 2b.	Project No.: 95-E-201 Construction Funded

10. Method of Performance:

Project management, design, inspection and construction management will be performed by the operating contractor. Construction will be performed under subcontracts awarded on the basis of competitive, fixed-price bidding.

1. Title and Location of Project:	TRA Fire and Life Safety Improvements Idaho National Engineering & Environmental Laboratory, Idaho	2a. Project No.: 95-E-201 2b. Construction Funded

11. Schedule of Project Funding and Other Related Funding Requirements:

a. Total Project Costs	Prior Year	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	Total
(1) Total facility costs											
(a) Line item (section 10.1)	$ 0	$ 0	$ 0	$1,696	$1,900	$1,000	$4,425	$2,425	$1,500	$2,500	$15,446
(b) Oper. Exp. Funded equip.	0	0	0	0	0	0	0	0	0	0	0
(c) Inventories	0	0	0	0	0	0	0	0	0	0	0
Total facility costs (Federal & non federal)	$ 0	$ 0	$ 0	$1,696	$1,900	$1,000	$4,425	$2,425	$1,500	$2,500	$15,446
(2) Other project costs											
(a) R&D Necessary to complete project	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
(b) Conceptual design costs	350	0	0	0	0	0	0	0	0	0	350
© Decontamination & Decommissioning (D&D)	0	0	0	0	0	0	0	0	0	0	0
(d) NEPA Documentation Costs	0	0	11	5	0	0	0	0	0	0	16
(e) Other proj-related costs	0	0	190	69	101	117	326	196	100	100	1,199
Total other proj-costs	350	0	201	74	101	117	326	196	100	100	1,565
Total project costs	$ 350	$ 0	$ 201	$1,770	$2,001	$1,117	$4,751	$2,621	$1,600	$2,600	$17,011
(f) Non Federal Contribution	0	0	0	0	0	0	0	0	0	0	0
Net Federal Total Project Cost (TPC)	$ 350	$ 0	$ 201	$ 1,770	$ 2,001	$ 1,117	$ 4,751	$ 2,621	$1,600	$2,600	$17,011

1.	Title and Location of Project:	TRA Fire and Life Safety Improvements Idaho National Engineering & Environmental Laboratory, Idaho	2a. 2b.	Project No.: 95-E-201 Construction Funded

11. Schedule of Project Funding and Other Related Funding Requirements: (continued)

b. Related Annual Costs

(1)	Total facility operating costs	$1
(2)	Facility maintenance and repair costs	0
(3)	Programmatic operating expenses directly related to the facility	10
(4)	Capital equipment not related to construction but related to the programmatic effort in the facility	0
(5)	GPP or other construction related to the programmatic effort in the facility	0
(6)	Utility Costs	0
(7)	Other Costs	0
	Total related annual funding	$11

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements:

a. Total Project Costs

(1) Total facility cost - The total facility cost is based upon the conceptual design that was completed in February 1992 with schedule and escalation revised in December 1992. The Conceptual Design Cost Estimate was prepared utilizing the INEEL Cost Estimating Manual and DOE Order 5700.2C.

(a) Line item - Narrative not required.

(b) Operating Expenses funded equipment - Narrative not required.

(c) Inventories - Narrative not required.

NUCLEAR ENERGY R&D

ATR FUSION IRRADIATIONS
(Dollars in Thousands)

I. Mission Supporting Goals and Objectives:

The Advanced Test Reactor (ATR) will be used to conduct fusion program materials irradiation experiments. In accordance with an agreement with the Office of Energy Research (ER), the Office of Nuclear Energy, Science and Technology (NE) has designed and is in the process of fabricating and installing a suitable test vehicle for the fusion materials irradiation test program in the ATR.

The current effort to fabricate and install the test vehicle started in FY 1995 and is scheduled to be completed in FY 1998. Following completion of the test vehicle, irradiation experiments, funded by ER, will be conducted. The primary focus of the initial irradiation testing program will be to test advanced materials which are candidates for the structural components in the fusion system's first wall. The first series of irradiation tests will honor the commitment made by the Department to complete the program involving an international collaboration effort with Monbusho of Japan. After this initial commitment is completed, further fusion program testing in ATR is expected and will continue to be funded by ER.

FY 1998 was the last year that NE requested funding (two million dollars) in order to complete fabrication, installation and testing of the test vehicle. However, during the budget appropriation process, the two million dollars requested by NE for FY 1998 was appropriated in the Office of Energy Research budget.

II. Funding Schedule:

Program Activity	FY 1997	FY 1998	FY 1999	$ Change	% Change
ATR Fusion Irradiations	$757	$0	$0	$0	0
TOTAL, ATR Fusion Irradiations	**$757**	**$0[1]**	**$0**	**$0**	**0**

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
ATR Fusion Irradiations			
• Complete design and continue fabrication of the fusion materials irradiation test vehicle.	$757	$0	$0
Total ATR Fusion Irradiations	**$757[2]**	**$0**	**$0**

EXPLANATION OF FUNDING CHANGES FROM FY 1998 TO FY 1999:

None

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[1] $2,000,000 being funded in the Office of Energy Research budget.

[2] In FY 1997 Small Business Innovative Research and Small Business Technology Transfer programs were $20,000. Appropriation has already been reduced accordingly.

NUCLEAR ENERGY R&D
NUCLEAR ENERGY PLANT OPTIMIZATION
(Dollars in Thousands)

I. Mission, Supporting Goals and Objectives:

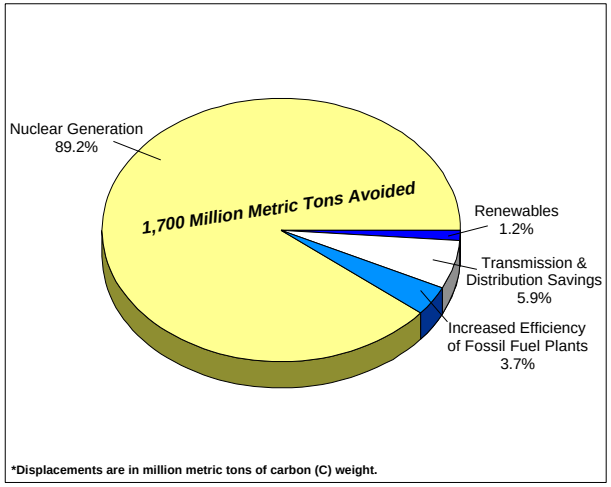

Fig 1: Nuclear Power Contribution to CO_2 Emission Reductions*
(CO_2 Emissions Avoided 1973-1994)

President Clinton presented his Climate Change Proposal on October 22, 1997, to meet the challenge of reducing greenhouse gas emissions. In December 1997, the United States agreed to the Kyoto Protocol on Climate Change that outlines specific greenhouse gas emission requirements. A key element of this protocol is binding emissions targets and timetables. The Protocol calls for the United States to reach emissions targets 7% below 1990 emissions levels over the five-year budget period of 2008-2012. Achieving these reductions can be a formidable task that would require reducing emissions by over 30 percent compared to AEO98 business-as-usual projections over this time period. It will be important to develop a comprehensive strategy which combines increased energy efficiency with greater use of cleaner energy sources.

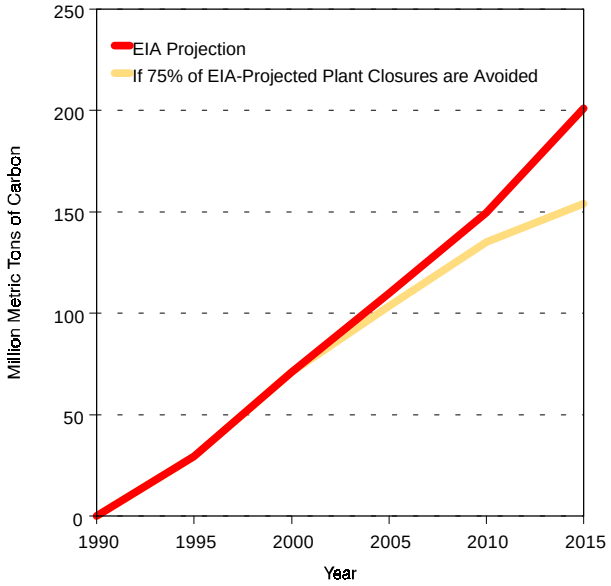

Fig 2: Increase in CO_2 Emissions from 1990 levels due to Electricity Generation

The Department of Energy believes that an important component of meeting the President's ambitious goals will be the continued, safe, and economic operation of the Nation's nuclear power plants. Nuclear power is an essential element in the overall energy supply mix of both the United States and the world, particularly as it relates to the international effort to reduce greenhouse gas emissions. Nuclear energy currently provides about 20 percent of the electricity in this country and 17 percent of the electricity throughout the world. Nearly one-half of the 50 U.S. states receive more than 25 percent of their electricity from nuclear power. Worldwide, 17 countries produce more than 25 percent of their electricity using nuclear power plants. France, for instance, obtains more than 75 percent of its electricity from nuclear energy.

Nuclear power plants generate electricity without producing carbon dioxide, sulfur oxide, or nitrogen oxide emissions that occur with the use of fossil fuels. Over the last 20 years, the use of nuclear-generated electricity in the United States has avoided more than 1,700 million metric tons of carbon that would have been emitted by coal-fueled power plants. This represents about 90 percent of the carbon emissions avoided by the U.S. electricity generation sector since 1973, as shown in Figure 1. Nuclear energy has had a similar environmental impact in other countries. For example, France reduced its CO_2 emissions by 80 percent during the 1980's through increased use of nuclear energy for electricity generation. Further, as shown in Figure 2, continued and more efficient use of nuclear energy can reduce emissions from the business-as-usual case by up to 14 million metric tons of carbon per year by 2010 and in 2015, the reduction can reach 47 million metric tons of carbon per year while enhancing the Nation's energy diversity and contributing to U.S. economic security and growth.

While nuclear power can provide significant environmental benefits, several important issues impede nuclear energy's potential--primary among these are issues related to the disposal of nuclear waste; international concerns about nuclear weapons proliferation; concerns about the safe operation of existing nuclear plants; and nuclear power's problematic economic record in the United States. If nuclear power is to play an important role in addressing the global climate change challenge, these issues must be addressed and the Department believes that the Federal government should play a strong role. While industry is primarily responsible for reducing costs and making nuclear power plants in the U.S. competitive and viable in a new era of electricity competition, the Federal government has an important, strategic national interests in having U.S. nuclear power plants continue to operate--to meet U.S. environmental objectives. Moreover, many Federal government policies, programs, regulations, trade restrictions, and other factors contribute directly to many of the difficult challenges facing nuclear energy in the United States. As a result, positive action by the Federal government is needed and appropriate.

This view is supported by the Presidential Committee of Advisors on Science and Technology (PCAST) Panel on Federal Energy R&D. The Panel identified the critical role of nuclear power in meeting global greenhouse gas emission reduction goals in its report of November 5, 1997. The Panel's report recommends that the Department work with its laboratories and industry to develop a program to address the problems that may prevent continued operation of existing nuclear power plants. The Department's proposed program has been developed in accordance with these recommendations and is consistent with the goals established by the 1997 DOE Strategic Plan, and is part of the President's Climate Change Technology Initiative.

The Department will develop a detailed Joint Strategic Plan in cooperation with the electric utility industry's Electric Power Research Institute (EPRI) and plans to collaborate closely with EPRI to meet the plan's objectives. The proposed program will involve the Nation's national laboratories, universities, utilities, and industry. This funding will also support the Department's efforts to leverage U.S. research and development in the nuclear energy area by establishing collaborative activities with foreign governments. This will require outreach to technical organizations from other governments to establish collaboration. The Nuclear Energy Research Advisory Committee (NERAC) will provide advice to the Director regarding the technical quality of the work carried out in the program, help assure that work carried out by the

Department is appropriate when compared with the shorter-term focus of the industry and the regulatory focus of the Nuclear Regulatory Commission, and help the Department assure that the program is making the best use of available resources.

Program Goals

To help the United States reach emissions targets 7% below 1990 emissions levels over the five-year budget period of 2008 to 2012, nuclear plants must continue to make a significant contribution to the Nation's electricity supply. If no action is taken, according to the Energy Information Agency's *1997 Annual Energy Outlook*, nuclear power plants will begin to shut down in large numbers after 2010, with 13 plants representing some 11,700 MWe potentially going off-line in 2014 alone. The Department believes that technologies proposed to be developed in this initiative can have a significant impact on EIA's baseline case. In particular, the Department proposes to pursue the following goals:

a) *Managing long-term effects of component aging:* Continued operation of a majority (90%) of the existing nuclear power plants through their current license terms will displace more than 3,950 million metric tons of carbon emissions between EIA's baseline year 1995 and 2035 (based on fossil fuel emissions for electricity generation in 1995).

b) *Establishing a viable license renewal option:* Extending the operation of existing nuclear plants for an additional 20 years could save up to 43.2 million metric tons of carbon emissions for each license extension of a 1,000 MWe plant. If the United States renews the license of 75% of the existing nuclear plants, emissions could be reduced by:

- 64 million metric tons between EIA's baseline year 1995 and 2010,
- 208 million metric tons by 2015; and
- 2260 million metric tons by 2055.

c) *Improving nuclear power plant capacity factors:* Increasing the average capacity factor of existing nuclear plants by just 1% has the same effect as bringing a new 1,000 MWe power plant on-line. The resulting savings in CO_2 are up to 2.2 million metric tons of carbon per year for each 1% improvement in the average capacity factor. Improving the capacity factor for U.S. existing nuclear plants from 76% (1996) to 85% by 2010 will provide:

- an additional carbon emission reduction of 143 million metric tons between EIA baseline year 1995 and 2010 and
- 530 million metric tons by 2055.

d) *Generation Optimization through Efficiency and Productivity Improvements:* Increasing the average capacity factor of existing plants by just 1% has the effect of bringing a new 1,000 MWe power plant on-line. The resulting savings in CO_2 are up to 2.2 million metric tons of carbon per year. Similarly, increasing the efficiency of various key plant components could offset substantial CO_2 emissions.

Program Objectives

To accomplish these strategic goals, the following specific objectives will be pursued**.**

1. Develop and demonstrate technologies to address the technical and regulatory barriers to continued safe and economic operation of existing nuclear power plants through their current and license renewal terms.

2. Develop and demonstrate technologies that increase the efficiency and productivity of existing nuclear power plants

II. Funding Schedule:

The program will be matched by the industry.

Program Activity	FY 1997	FY 1998	FY 1999	$ Change	% Change
Nuclear Energy Plant Optimization	$ 0	$0	$10,000	$+10,000	+100
TOTAL	**$ 0**	**$0**	**$10,000**	**$+10,000**	**+100**

III. **Performance Summary - Major Accomplishments:**	**FY 1997**	**FY 1998**	**FY 1999**
• *Technologies to Optimize Plant Service*	$0	$0	$5,000

- Optimization of Plant Component Service: Research will be initiated at DOE national laboratories, universities, and private sector research facilities to understand, characterize, and manage the long-service impacts on key reactor components, primary system piping, steam generator tubes, electric cables, and safety-related reinforced concrete structures. Technology development will be focused on timely detection, mitigation and prevention of significant long-term in-service effects such as stress corrosion cracking (in low oxygen environments), irradiation assisted stress corrosion cracking, stress relaxation, reduction in fracture toughness due to neutron irradiation, and concrete structure cracking. This cooperative program on degradation of reactor components, systems and structures is a multi-year program involving laboratory tests, component inspections, and technology demonstrations. The program would address difficult technology issues that the Department is better equipped to solve than the industry--because of the unique facilities and capabilities only available to the Federal government and due to the long-term, high-risk nature of the required research. The program would complement existing EPRI and NRC R&D activities and be conducted in close coordination with both organizations.

- Technology Demonstration: Each technology development involves the associated regulatory licensing approvals required for in-plant demonstrations; *e.g.*, noble metal chemical addition for mitigating stress corrosion cracking of vessel internals; *in-situ* cable system condition monitoring to qualify cables for extended operation; embrittlement meter for detecting fracture toughness of vessels; and nondestructive examination techniques for detecting steam generator tube cracks.

III. **Performance Summary - Major Accomplishments: (continued)**	FY 1997	FY 1998	FY 1999
• *Technologies for Extended Service:*	$0	$0	$2,000

- Establish Technical Requirements: Conduct technology development to support industry and the NRC efforts to establish the technical criteria and standards required for implementing the license renewal regulatory process.

- Technology Demonstration: Four license renewal demonstration pilots, one representing each major U.S. design type, will be selected for this program, with the first of these four license renewal application submittals targeted for 1999, enabling the first NRC approved license renewal application by the year 2002. The demonstration pilot will explore various approaches to satisfying the technical requirements of the License Renewal Rule (10CFR54) and will lead to optimization of the license renewal process. The goal of this activity is to demonstrate that license renewal is achievable and to work with industry and the NRC to simplify the process. A comprehensive set of guidelines and tools will be developed.

III. Performance Summary - Major Accomplishments (continued):	FY 1997	FY 1998	FY 1999
• *Generation Optimization through Efficiency and Productivity Improvements:*	$0	$0	$3,000
- Digital instrumentation and controls: Development of NRC licensable replacements for outdated analog instrumentation and controls which require excessive repairs and result in unplanned shutdowns, e.g., Balance of Plant instrumentation, self checking/calibrating sensors and fiber optic technology.			
- On-line diagnostics and information management: Development of on-line diagnostic and information management systems based on advances in digital technology and artificial intelligence applications could extend the periods between mandated maintenance, improve component reliability, improve thermal efficiency, and reduce plant shutdowns due to component failures.			
- Advanced maintenance technologies: Development of applications for commercial nuclear plants based on current robotic technology used in other industries for complicated remote maintenance, repair, and component replacement in harsh radiation and temperature environments in order to significantly improve the economics and effectiveness of plant operation and maintenance.			
Total Nuclear Energy Plant Optimization	**$0**	**$0**	**$10,000[1]**

[1] $265,000 will be allocated to Small Business Innovative Research and Small Business Technology Transfer programs.

EXPLANATION OF FUNDING CHANGES FROM FY 1998 to FY 1999:

New program for FY 1999, to support innovative nuclear energy R&D as recommended by PCAST Panel on Federal Energy Research and Development.	**+$10,000**

NUCLEAR ENERGY R&D

NUCLEAR ENERGY RESEARCH INITIATIVE
(Dollars in Thousands)

I. Mission Supporting Goals and Objective:

A primary mission of the Department of Energy is to help assure that the United States maintains a flexible and diverse portfolio of energy supply options to power economic growth and enhance the quality of life for the American people. Nuclear energy currently provides about 20 percent of U.S. electricity generation and can contribute a significant portion of U.S. electrical energy production for many years to come. As we now enter a new millennium, the Nation faces new issues associated with energy supply and environmental policy. The potential role of nuclear power to address these new issues, such as global climate change, will depend upon the ability of the Federal government, universities, national laboratories, industry, and others to pool their talents and creatively address the key challenges affecting the future of nuclear energy. This was clearly articulated in the President's Committee of Advisors on Science and Technology (PCAST) Panel on Federal Energy Research and Development Panel report of November 5, 1997 to the President.

The United States has been the world leader in both the policy and technical aspects of nuclear energy since the end of the Second World War. The U. S. has more nuclear power plants in operation today than any other nation and most of the world's operating nuclear power plants are based on U.S. light water reactor technology. U.S. nuclear power plant technology has been exported and adapted for use in France, Japan, South Korea, and many other countries. Today, advanced light water reactor technology developed in the U. S. represents the safest, most advanced, and most proliferation-resistant nuclear power option available. Many countries, particularly the fast-growing economies in Asia, are interested in building new plants based on U.S. designs. Given the projected growth in global energy demand as developing nations industrialize; our vital strategic interests in addressing global climate change, nuclear non-prdiferation, nuclear safety, and economic competitiveness; and our need to satisfy growing domestic needs for energy in an environmentally responsible manner, the United States must maintain its scientific and technological leadership in nuclear energy.

While nuclear power presents significant environmental and other benefits, several important issues impede nuclear energy's future--among these are issues related to the disposal of nuclear waste; international concerns about nuclear weapons proliferation; concerns about safety and nuclear power's problematic economic record in the United States. Industry and government share in the responsibility for these problems and it is in the long term strategic interests of the Nation that they be addressed and resolved. In particular, because no new nuclear power plants are expected to be built in this country for at least another decade, it is important that the government take appropriate action both to address key issues and maintain to a viable technology infrastructure in the United States. To date, current trends in industry, government, and universities contrast with the vital strategic needs of the Nation:

- because of the lack of near-term economic prospects, U.S. industry's support of nuclear research continues to shrink and the ability of our domestic technology companies to respond to any future domestic requirements in the nuclear technology arena is diminishing;

- university nuclear engineering and research programs face severe challenges and reduced funding, paralleling the reduced outlook for nuclear energy-related jobs in industry; and

- the role of the Federal Government in nuclear energy research has already changed--in the early 1980's the Department's nuclear energy research activities expended nearly half a billion dollars each year while equivalent programs in 1997 received less than $40 million.

Recognizing the important national need to address these issues, the PCAST Panel on Federal Energy Research and Development Panel recommended that the Department establish a new nuclear energy research effort. The Department endorses this recommendation and proposes the creation of the **Nuclear Energy Research Initiative** (NERI) to address the key issues affecting the future of nuclear energy and to preserve the Nation's nuclear science and technology leadership.

NERI will feature a competitive, peer-reviewed selection process to fund innovative nuclear energy-related research at universities, national laboratories, and industry. The Department believes that in funding creative research ideas at the Nation's science and technology institutions and companies, the United States will realize a new potential for finding new solutions to issues such as nuclear safety, power plant economics, proliferation, and nuclear waste.

To achieve this goal, the following objectives have been established for NERI:

- Develop advanced concepts and scientific breakthroughs in nuclear fission technology that will further enhance nuclear energy as a safe, environmentally sound, and cost-effective energy source to meet the world's growing need for electric power;

- Facilitate the transfer of technology developed for defense related activities to address technology challenges in the civilian sector; and

- Encourage international cooperation in addressing nuclear technology issues.

This research initiative will be managed by the Department's Office of Nuclear Energy, Science and Technology with external oversight provided on a periodic basis by a proposed Nuclear Energy Research Advisory Committee (NERAC) to guide the strategic focus of research. The Department will encourage joint research and development activities among universities, national laboratories, and industry; as well as the involvement of foreign research organizations. The Department will solicit proposals from the scientific and technical community for research in areas relevant to addressing the vital issues facing nuclear energy. NERI will include a two stage independent peer review process to evaluate and select specific research proposals to ensure the scientific and technical merit and relevancy of the research. NERI activities will be coordinated with other relevant DOE program offices to assure that the best use is made of the Department's financial, intellectual, and physical resources.

Through NERI, the Department will develop and publish summaries of R&D activities, achievements and maintain depositories of information, data, computer programs for each established core nuclear R&D area. An annual report will be published and provided to a wide audience to encourage increased participation.

NERI has as its primary mission the enhancement of nuclear energy technology over the long term. As a result, its R&D activities must address both *evolutionary* technologies and *innovative* concepts. Key areas in which the Department will seek research proposals in FY 1999 include but are not limited to:

- *Proliferation-Resistant Reactor and Fuel Technologies*
- *High Efficiency Combined Heat and Power Systems*
- *Nuclear Safety & Risk Analysis*
- *Materials Science and Non-Destructive Testing*
- *Thermal Hydraulics*
- *Nuclear Fuel & Reactor Physics*
- *Advanced Lower-Power Reactor Designs & Applications*
- *High Efficiency Nuclear Fuel*
- *Advanced Instrumentation, Controls and Diagnostics*
- *New Technologies for Nuclear Wastes (including but note limited to storage and permanent disposal)*

II. Funding Schedule:

Program Activity	FY 1997	FY 1998	FY 1999	$ Change	% Change
Nuclear Energy Research Initiative	$0	$0	$24,000	$24,000	+100
TOTAL, Nuclear Energy Research Initiative	**$0**	**$0**	**$24,000**	**$24,000**	**+100**

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
Nuclear Energy Research Initiative	$0	$0	$24,000
Total, Nuclear Energy Research Initiative	**$0**	**$0**	**$24,000[1]**

EXPLANATION OF FUNDING CHANGES FROM FY 1998 TO FY 1999:

New program for FY 1999, to support innovative nuclear energy R&D as recommended by PCAST Panel on Federal Energy Research and Development.	**+$24,000**

[1] As part of the competitive process, $636,000 will be allocated to the Small business Innovative Research and Small Business Technology Transfer programs.

NUCLEAR ENERGY R&D

NUCLEAR TECHNOLOGY R&D
(Dollars in Thousands)

I. Mission Supporting Goals and Objectives:

The central goal of Nuclear Technology R&D is treatment of DOE spent nuclear fuels using electrometallurgical methods to immobilize fission products and transuranic elements for safe storage and ultimate disposition in an approved geological repository. This activity supports the Department's mission to manage approximately 2,700 metric tons of spent nuclear fuel currently in its inventory. This program could reduce life-cycle costs by developing and deploying an innovative spent fuel treatment technology to solve currently intractable problems. Efforts in this area are important to the Department's strategic environmental-quality goal to aggressively solve the legacy of nuclear weapons and civilian nuclear research and development programs, minimize waste volumes, safely manage nuclear materials, and permanently dispose of the Nation's radioactive wastes.

The challenge of effectively managing the large inventory of DOE spent nuclear fuel is greatly complicated by the fact that it consists of about 150 different fuel types. Some of these spent fuels present special problems, *(e.g.*, the presence of hazardous materials such as sodium). Other spent fuels are damaged, such as the core debris from Three Mile Island unit 2. Spent fuel with these characteristics will not be acceptable for disposal in current form in a geologic repository and therefore must be treated. A prime example of this type of challenge is the spent fuel the Department removed from the shutdown Experimental Breeder Reactor-II (EBR-II) at the Argonne National Laboratory-West (ANL-West). The EBR-II fuel is metal with elemental sodium between the uranium fuel pins and the fuel cladding. The presence of the sodium makes the EBR-II spent fuel unique. Sodium metal is highly reactive; it burns in air and can explode when exposed to water. The Department has found that because the sodium is partially absorbed by the uranium fuel elements, mechanical means will not be fully effective in removing sodium. Therefore, this fuel will have to be treated to create a waste form acceptable for disposal. The only treatment process that the Department has found that can adequately remove the sodium from EBR-II spent fuel is the electrometallurgical treatment technology being developed by Argonne National Laboratory. The Department issued an environmental assessment in February 1996 that analyzed a proposed demonstration of electrometallurgical technology to treat a small fraction of the EBR-II fuel and blanket assemblies. This EBR-II spent fuel treatment demonstration project is currently underway at ANL-West and will be completed during FY 1999

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Under the Nuclear Technology R&D program, Argonne National Laboratory-East (ANL-East) is conducting electrometallurgical treatment R&D primarily to ensure timely completion and accurate assessment of the EBR-II spent fuel treatment demonstration at ANL-West. In addition to direct analytical support to demonstration operations, limited R&D efforts are directed to increasing understanding and managing the remaining technical challenges of applying the electrometallurgical technology to spent nuclear fuel treatment, in order to achieve gains in process efficiency and effectiveness. These gains will also support the EBR-II demonstration, and will develop data in electrorefining and waste form fabrication and performance that will be useful to evaluation of the demonstration results and future consideration of using the technology to treat other DOE spent fuels. The electrometallurgical treatment technology is not being developed to address commercial spent fuel, but only that spent fuel owned by the Department and located at its facilities.

FY 1999 is the final year the Department expects to request funding for the EBR-II spent fuel treatment demonstration. This demonstration, together with available experimental data, will enable the Department to make a decision on whether electrometallurgical treatment can be used to treat the remaining sodium-bonded spent fuel and to address other DOE spent fuel forms. If electrometallurgical treatment technology is not used, a new R&D activity will have to be conducted to find other alternatives. Electrometallurgical treatment techniques also may serve as primary and backup options for the Department's aluminum-based oxide, and possibly zirconium alloy-clad-metal, spent fuels.

A National Academy of Sciences (NAS) panel, through the National Research Council, provides an ongoing evaluation of R&D activity on electrometallurgical techniques for treatment of DOE spent fuel, including specific application to EBR-II spent fuel, under the Nuclear Technology R&D program. The NAS evaluation is expected to continue through the completion of the EBR-II spent fuel treatment demonstration, and will include analytical comparisons with other technologies. The National Research Council produces up to two reports per year from this ongoing evaluation. As the NAS has recommended, clear criteria for determining the viability of the technology will be developed and used to guide completion of the demonstration and its technical evaluation.

The Nuclear Technology R&D program focuses on the following significant activities:

- Continued electrometallurgical R&D to support successful completion of the EBR-II spent fuel treatment demonstration
- Final testing of electrometallurgical waste stream process equipment for fission product and transuranic element immobilization.
- Continued waste form development, characterization and qualification.

II. Funding Schedule:

Program Activity	FY 1997	FY 1998[1]	FY 1999	$ Change	% Change
Electrometallurgical Treatment R&D for Application to DOE Spent Fuels, Waste Treatment, and Waste Form Production and Qualification	$ 19,475	$20,000[1]	$25,000	$+5,000[2]	+25%[2]
TOTAL, Nuclear Technology R&D	**$ 19,475**	**$ 20,000**[1]	**$25,000**	**$ +5,000**[2]	**+25%[2]**

[1] The $20,000,000 identified in FY 1998 is provided under two separate accounts: $12,000,000 for Nuclear Technology R&D under Other Defense Activities, and $8,000,000 for Termination Costs under Energy Supply R&D (both under Energy and Water Development Appropriation Act).

[2] Actual increase in total funding for the identified activities is $5,000,000, or +25%, from $20,000,000 ($12,000,000 under Nuclear Technology R&D and $8,000,000 under Termination Costs) in FY 1998 to $25,000,000 in FY 1999.

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
Electrometallurgical Treatment R&D for Application to DOE Spent Nuclear Fuels, Waste Treatment, Waste Form Production and Qualification			
• Specify operating parameters and provide ongoing analytical support for high-throughput operations in the EBR-II spent fuel and blanket treatment demonstrations; develop modeling to support high-throughput equipment and operating modifications as required. Additionally, perform experimental evaluations for enhancing electrorefiner process efficiency and effectiveness, to ensure timely completion of the EBR-II demonstration and provide data needed to accurately assess demonstration results, and conduct environmental analyses to support preparation of an EIS.	$3,500	$5,000	$9,337
• Perform experiments and analyses evaluating electrometallurgical treatment of TMI-2 core debris and other DOE oxide fuels.	$5,000	$2,000	$0
• Complete feasibility experiments with unirradiated aluminum matrix fuel materials to provide basis for technology selection by DOE	$500	$1,000	$0
• Other Development and Technology Support[1]	$475	$0	$0
• Develop and demonstrate waste stream treatment processes, optimize waste form production procedures, initiate long-term tests to characterize performance of reference waste forms in accordance with established testing protocol, and develop waste form qualification plans and modeling which can be used to gain Nuclear Regulatory Commission approval for emplacement of metal and ceramic waste forms in a geologic repository.	$10,000	$12,000	$15,000
• Small Business Innovative Research and Small Business Technology Transfer programs.	$0[2]	$0	$663
Total, Nuclear Technology R&D	**$19,475**	**$20,000[3]**	**$25,000**

[1] These FY 1997 accomplishments included R&D in the electrometallurgical treatment of Molten Salt Reactor Experiment fuel salts ($300,000, terminated in May 1997), and support of other research projects ($175,00).

[2] In FY 1997 Small business Innovative Research and Small Business Technology Transfer programs were $525,000. Appropriation has already been reduced accordingly.

[3] The $20,000,000 identified in FY 1998 is funded under two separate accounts: $12,000,000 for Nuclear Technology R&D under Other Defense Activities, and $8,000,000 for Termination costs under Energy Supply R&D (both under the Energy and Water Development Appropriation).

EXPLANATION OF FUNDING CHANGES FROM FY 1998 TO FY 1999:

The $5,131,000 increase in FY 1999 addresses the additional costs of increased analytical support for high-throughput electrorefining operations at ANL-West and increased waste form testing, to ensure timely completion and evaluation of the EBR-II Spent Fuel Demonstration in FY 1999 which is needed to support a decision by the Department on the potential future use of electrometallurgical treatment technology to address the Department's spent fuel challenges.	+5,000

DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, Narrative in whole dollars)

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY
FACILITIES PROGRAM

PROGRAM MISSION

The goals of the Facilities Program are to ensure cost-effective, environmentally compliant operation of NE sites and facilities in support of Departmental missions, and to place excess facilities into an industrially and radiologically safe shutdown condition, and to maintain the physical and technical infrastructure necessary to achieve the Department's mission.

In addition, the Facilities Program funds surveillance and maintenance activities necessary to maintain the Fast Flux Test Facility (FFTF) and the adjacent Fuels and Materials Examination Facility (FMEF) at the Hanford site near Richland, Washington, in a safe standby condition. The FFTF is a 400 megawatt, sodium-cooled, fast flux test reactor. The Department is considering restarting the FFTF in order to produce tritium for the nuclear weapons stockpile. If the reactor were proposed for restart for that purpose, the Department would consider supplemental missions for the facility, particularly the production of medical isotopes. The Department expects to make a decision regarding the future status of the FFTF in 1998. If the decision is made to not restart the FFTF, then full deactivation of the facility, begun in 1994, would resume.

Shutdown activities are currently underway at the Experimental Breeder Reactor II (EBR-II) and other surplus facilities at the Argonne National Laboratory-West (ANL-W) site near Idaho Falls, Idaho. The shutdown activities include defueling the EBR-II core; draining the sodium coolant from EBR-II; sealing the EBR-II primary and secondary cooling systems; demonstrating treatment of the EBR-II spent fuel and blanket subassemblies; and processing the EBR-II and other sodium in the Sodium Process Facility (SPF). Defueling of the reactor was completed in December 1996. The Department initiated a program to demonstrate the use of electrometallurgical technology in June 1996 and this program--which will treat 125 EBR-II spent fuel and blanket assemblies--is planned to be completed in June 1999.

The purpose of the technology demonstration is to produce data that will enable the Department to decide whether to apply electrometallurgical technology to convert remaining sodium-bonded spent nuclear fuel in Idaho and possibly other DOE spent fuels into a form suitable for long-term storage. If such an action is proposed, the Department will conduct an appropriate National

Environmental Policy Act review. The result of such a review will determine future resource requirements. The Department plans to conduct waste management and other site activities at ANL-W while the EBR-II deactivation proceeds. The budgetary requirements for site management will ultimately depend on several future developments, including the methods chosen to treat wastes at the site to meet DOE commitments to the State of Idaho.

The OBJECTIVES related to these goals are:

1. Support the Secretary's decision to either restart the FFTF and FMEF for production of tritium or continue to deactivate the facilities.

2. Maintain and operate facilities to meet mission requirements in a safe and environmentally sound manner.

3. Deactivate surplus facilities in cooperation with other government entities.

4. Place unneeded facilities into a safe shutdown condition requiring minimum surveillance and maintenance.

5. Assist other domestic entities to clean up unneeded sodium reactor facilities.

PERFORMANCE MEASURES:

Performance measures for the Facilities program include:

- Maintain the FFTF and the FMEF in a safe and environmentally compliant condition.

- Prepare the appropriate National Environmental Protection Act documentation and environmental permits for the FFTF and FMEF.

- Conduct shutdown activities at the ANL-W site in accordance with cost and baseline schedules established in the termination plan, including operation of facilities required to support shutdown safely in accordance with applicable rules, regulations, approved safety documentation and DOE directives.

SIGNIFICANT ACCOMPLISHMENTS AND PROGRAM SHIFTS:

- In FY 1995, completed the defueling of the FFTF reactor vessel, initiated the washing and off loading of the spent nuclear fuel to interim dry storage casks, and deactivated 23 of 96 plant support systems.

- In FY 1996, completed washing and off loading 84 of 382 spent fuel assemblies to dry storage casks.

- In FY 1997, completed the construction of a RCRA-compliant Sodium Storage Facility to safely store the sodium coolant from the FFTF primary and secondary heat transport systems.

- In FY 1997, a Secretarial decision was made to maintain the FFTF in standby and to further evaluate the tritium production capabilities of the facility.

- In FY 1999, assuming a decision to restart FFTF and FMEF for tritium production is made, initiate designs for fuel and target assemblies and upgrades to FFTF and FMEF systems and equipment, modify safety analysis reports, and provide safeguards and security upgrades. Assuming a decision to resume deactivation of FFTF, the significant accomplishments for FY 1999 include preparations to drain FFTF sodium coolant to the Sodium Storage Facility, procuring additional interim, dry storage casks, washing and off loading FFTF fuel, and shutting down auxiliary plant systems.

- In FY 1995, EBR-II operation at ANL-W ceased and shutdown was initiated in October 1994. Shutdown activities include defueling of EBR-II, manufacturing and insertion of dummy subassemblies in EBR-II, and Fuel Conditioning Facility (FCF) modifications to enable treatment of spent fuel and blankets to place into a form suitable for long-term storage.

- In FY 1995, completed shutdown of theTransient Reactor Test Facility at ANL-W.

- In FY 1996, defueling of EBR-II and preparations to treat spent fuel continued.

SIGNIFICANT ACCOMPLISHMENTS AND PROGRAM SHIFTS: (continued)

- In FY 1996, an Environmental Assessment and subsequent Finding of No Significant Impact was issued; this resulted in the initiation of the demonstration of electrometallurgical technology for treating EBR-II spent fuel and blankets.

- EBR-II defueling was completed in December 1996 and demonstration of electrometallurgical technology for treatment of fuel and blankets in the FCF was initiated in June 1996.

- In FY 1997, an Environmental Assessment and subsequent Finding of No Significant Impact were issued that addressed EBR-II shutdown actions, including the processing of sodium.

- In FY 1997, completed modifications to the Sodium Process Facility to enable processing of elemental sodium into sodium carbonate which is suitable for environmentally acceptable disposal.

- In FY 1998, complete processing of 77,000 gallons of Fermi sodium.

- In FY 1998, continue shutdown of EBR-II and other unneeded ANL-W facilities, and continue the fuel treatment demonstration.

- In FY 1999, complete the spent fuel electrometallurgical treatment technology demonstration.

- In FY 1999, complete National Environmental Policy Act review of any proposed spent fuel treatment using electrometallurgical technology.

FACILITIES PROGRAM

PROGRAM FUNDING PROFILE

Sub-program	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Fast Flux Test Facilities (FFTF)	$32,100[1]	$0[2]	0	0	$31,200[3]
Closeout of Excess Facilities	78,589	77,035	-886	76,149	64,950
TOTAL, Facilities Program	**$110,689**	**$77,035[2]**	**-886[4]**	**76,149**	**$96,150**

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[1] Congressionally-approved FY 1997 reprogramming request transferred $31,100,000 from the Environmental Management (EM) budget and $1,000,000 from the Advanced Radioisotope Power Systems budget to the Facilities account.

[2] Environmental Management (non-defense) budget is providing $30,904,000 in FY 1998 to maintain the FFTF in standby pending a decision on its potential role in the Department's tritium supply strategy. If the Department decides during 1998, either to proceed with the potential restart option or to proceed with deactivation, additional funds will be required.

[3] A decision by the Department to either pursue the potential restart of the FFTF for tritium production or resume the deactivation of the facility is expected in 1998. The FY 1999 budget request of $31,200,000 will not be adequate to implement either option associated with the decision. The $31,200,000 is the minimum budget to maintain the facility in its current standby condition. The FY 1999 funding requirement to support the potential restart option is $61,900,000. The FY 1999 funding requirement to support the deactivation option is $58,200,000.

[4] Reflects a reduction for contractor training mandated by House Report language.

FACILITIES PROGRAM

PROGRAM FUNDING BY SITE
(Dollars in Thousands)

Laboratory/Plant/Installation	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Albuquerque Operations Office					
Other	$100	$0	$0	$0	$0
Chicago Operations Office					
Argonne National Laboratory-(East)	$0	$8,000	$0	$8,000	$0
Argonne National Laboratory-(West)	70,430	69,035	-886	68,149	64,950
Other	205	0	0	0	0
Nevada Operations Office					
Remote Sensing Laboratory	30	0	0	0	0
Oakland Operations Office					
Rockwell International	25	0	0	0	0
General Atomics	3,081	0	0	0	0
Lawrence Livermore National Laboratory	50	0	0	0	0
Other	149	0	0	0	0
Oak Ridge Operations Office					
Oak Ridge National Laboratory	2,700	0	0	0	0
Richland Operations Office					
Fluor Daniel Hanford	31,100	0[1]	0	0	31,200
Pacific Northwest National Laboratory	1,018	0	0	0	0
All Other Sites	1,801	0	0	0	0
TOTAL	**$110,689**	**$77,035[2]**	**$-886[3]**	**$76,149**	**$96,150**

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY

[1] Environmental Management (non-defense) budget is providing $30,904,000 in FY 1998 to maintain the FFTF in standby pending a decision on its potential role in the Department's tritium supply strategy.

[2] Includes $8,000,000 for Nuclear Technology R&D.

[3] Reflects a reduction for contractor training mandated by House Report language.

CAPITAL OPERATING EXPENSES AND CONSTRUCTION SUMMARY

FACILITIES PROGRAM
(Dollars in Thousands)

	FY 1997	FY 1998	FY 1999	$ Change	% Change
Capital Operating Expenses					
General Plant Project (GPP)	$1,500	$2,500	$1,000	$1, 500	-60
Modifications to Reactors	$2,700	$ 0	$ 0	$ 0	0
Capital Equipment	$1,000	$1,000	$1,000	$ 0	0

FACILITIES PROGRAM
(Dollars in Thousands)

I. Mission Supporting Goals and Objectives:

Ensure cost-effective, environmentally compliant operation of NE sites and facilities in support of Departmental missions.

Complete defueling and closure of the EBR-II and the shutdown of other surplus ANL-W site facilities.

II. Funding Schedule:

Program Activity	FY 1997	FY1998	FY 1999	$ Change	% Change
FFTF	$32,100[1]	$0[2]	$31,200[3]	$+31,200	+100
Gas Turbine-Modular Helium Reactor	5,781	0	0	0	0
Argonne National Laboratory-East	0	8,000	0	-8,000	-100
Argonne National Laboratory West	70,430	68,149	64,950	-3,199	-5
Other	2,378	0	0	0	0
Total, Facilities Program	**$110,689**	**$76,149[4,5]**	**$96,150**	**$+20,001**	**+26**

1 Congressionally-approved FY 1997 reprogramming request transferred $31,100,000 from the Environmental Management budget and $1,000,000 from the Advanced Radioisotope Power Systems budgets to the Facilities account.

2 Environmental Management (non-defense) budget is providing $30,904,000 in FY 1998 to maintain the FFTF in standby pending a decision on its potential role in the Department's tritium supply strategy. If the Department decides during 1998, either to proceed with the potential restart option or to proceed with deactivation, additional funds will be required.

3 A decision by the Department to either pursue the potential restart of the FFTF for tritium production or resume the deactivation of the facility is expected in 1998. The FY 1999 budget request of $31,200,000 will not be adequate to implement either option associated with the decision. The $31,200,000 is the minimum budget to maintain the facility in its current standby condition. The FY 1999 funding requirement to support the potential restart option is $61,900,000. The FY 1999 funding requirement to support the deactivation option is $58,200,000.

4 Reflects a reduction for contractor training mandated by House Report language.

5 Includes $8,000,000 for Nuclear Technology R&D.

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
Activities			
Fast Flux Test Facility			
• Maintain the FFTF and the FMEF in a safe and compliant condition	$32,100	$ 0	$31,200
Gas Turbine-Modular Helium Reactor			
• Complete the collection, inventory, and disposition of DOE owned GT-MHR research materials and equipment at the General Atomics owned facilities at LaJolla, California.	3,081	0	0
• Complete the collection, inventory, and disposition of GT-MHR research materials, equipment, and facilities at ORNL.	2,700	0	0
Total GT-MHR	$5,781	$ 0	$ 0
Argonne National Laboratory West			
• Complete defueling of the EBR-II.	2,500	0	0
• Transfer and store spent fuel.	7,000	6,300	5,000
• Complete modification, test and checkout of the SPF.	1,000	0	0
• Process sodium to produce salt suitable for disposal.	7,900	8,000	5,600
• Conduct the electrometallurgical technology demonstration in the FCF and develop data upon which to base future fuel conditioning decisions.	23,100	25,300	28,350
• Deactivate and close EBR-II systems and ancillary support facilities.	7,100	7,200	6,100
• Ensure environmentally compliant and safe operations; provide for site security and nuclear material safeguards; and conduct surveillance and maintenance of shutdown facilities.	16,630	16,900	15,800

III. Performance Summary - Major Accomplishments: (continued)	FY 1997	FY 1998	FY 1999
Argonne National Laboratory West (continued)			
• Replace and upgrade equipment necessary to support termination activities.	1,000	714	300
• Conduct capital projects required to support termination activities.	4,200	1,900	300
• Manage currently generated low-level hazardous and mixed waste in support of site activities.	0[1]	1,835	3,500
Total ANL-W	$70,430	$68,149	$64,950
Argonne National Laboratory-East			
• Conduct electrometallurgical treatment R&D for application to DOE spent fuels, waste treatment and waste form production and qualification.	$0	$8,000	$0
Other			
• General reduction, management studies and evaluations.	$2,378	$0	$0
Total, Facilities Program	**$110,689**	**$76,149[2]**	**$96,150**

EXPLANATION OF FUNDING CHANGES FY 1998 TO FY 1999:

• This is a new decision unit in FY 1999. Funding for FFTF was included in FY 1997 through a reprogramming of funds from the Environmental Management budget (non-defense). In addition to the $76,149,000 shown for FY 1998, the Environmental Managment (non-defense) budget includes $30,904,000 to maintain the FFTF in a standby condition, pending a decision on its potential role in the Department's tritium supply strategy. In summary, the actual funding requested for FY 1999 represents a decrease compared to FY 1998.	$+20,001

[1] Funded by Environmental Management in FY 1997.

[2] Reflects a reduction for contractor training mandated by House Report language.

DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, Narrative in whole dollars)

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY
ISOTOPE PRODUCTION AND DISTRIBUTION PROGRAM

PROGRAM MISSION

Many uses for radioactive and enriched stable isotopes have emerged over the past generation as an adjunct of nuclear research, defense, and power development programs. As the range of available isotopes and the recognized uses for them have increased, isotope applications have become essential to progress in medical research and practice, new industrial processes, and scientific methodology. Therefore, an adequate supply of medical and research isotopes is essential to the Nation's health care system, and to basic research and industrial applications that contribute to national economic competitiveness.

The Isotope Support decision unit will fund a payment into the Isotope Production and Distribution revolving fund (Isotope Program). The Department's annual request for this activity is required to support production and distribution of radioactive and stable isotopes, and to provide associated services to commercial and research customers. Funding provides radioisotopes and enriched stable isotopes for research and development, medical diagnosis and therapy, isotopes applications, to support nuclear medicine research, and to support administrative activities.

The Isotope Program mission is to serve the national need for a reliable supply of isotope products and services for medicine, industry, and research. The program supports development of new or improved isotope products and services that enable medical diagnoses and therapy, and other applications that are in the national interest. Prices charged for these products and services may not always achieve full-cost recovery to the Government. The Department encourages private sector investment in new isotope production ventures and will sell or lease its facilities and inventories for commercial purposes. If private sector production of a given isotope becomes well established, DOE will no longer supply that isotope.

The request for the Isotope Program includes support for the Department's project to establish a capability to produce the vital medical isotope molybdenum-99 (Mo-99). This isotope is used in over 36,000 medical procedures per day in the U.S. to diagnose maladies such as cancer and heart disease. Sixty percent or more of the U.S. supply currently depends on a single aging reactor in Canada that will cease operation in the year 2000, and the U.S. medical community has expressed concern about the reliability of supply. The vulnerability of the Canadian supply was demonstrated when the labor force at the reactor site went on strike in June 1997. The Canadian supplier could only

provide about 25 percent of their U. S. customers' needs for Mo-99 through backup arrangements with European producers. On September 11, 1996, the Department decided to produce Mo-99 and related medical isotopes to provide the United States with a backup source of this vital isotope until a more reliable commercial source of supply—possibly through the privatization of the Department's program—becomes available. The Department's intent is not to compete with commercial suppliers. Federal support for Mo-99 production will end when reliable, secure alternatives become available. In early FY 1997, the Department produced several batches of Mo-99 quality evaluation samples. During the remainder of FY 1997, the Department reconfigured the Annular Core Research Reactor at Sandia National Laboratories, New Mexico, and prepared the hot cell for modifications to establish a sustainable Mo-99 production capacity. With an additional $3,700,000 made available in FY 1998 through a transfer of appropriations, the hot cell will be modified to establish a capacity to process the equivalent of 100 percent of the U.S. demand for Mo-99 by the end of FY 1998.

This budget also includes a request for a $6,000,000 construction project for the Los Alamos Isotope Target Irradiation Station. For more than 20 years, the Los Alamos National Laboratory has contributed to the highly successful growth in nuclear medicine by making available essential isotopes at a target irradiation station located at the Los Alamos Neutron Science Center. When the experiments under the Accelerator Production of Tritium Program sponsored by Defense Programs, are concluded in FY 1999, beam delivery to the current isotope production facility will cease. The lack of isotopes produced by Los Alamos would cause a disruption of vital research, medical therapy and diagnosis. Over 30 isotopes are produced at Los Alamos; many of them are not available elsewhere. In addition to medical research applications, the isotopes are used for important biological and environmental research. Unless this project is completed, these isotopes will not be available to support vital research. Thus, relocation of the isotope production facility is essential to continued isotope production and will support the national interest. The new target irradiation facility will offer improved isotope quality with greater efficiency and economy of operations because of lower power requirements, improved access to targets, and more effective beam energy.

The FY 1999 budget request under the Isotope Support decision unit is $22,450,000. This budget request combined with projected revenues of $10,100,000 should provide the revolving fund sufficient funding to meet total estimated program expenses of $32,550,000.

The GOAL of the Isotope program is to:

Maintain financial viability to ensure a reliable supply of medical, research, and industrial isotopes consistent with customer needs.

The OBJECTIVES related to this goal are:

1. Manage production and distribution of selected isotopes reliably and cost effectively in coordination with other isotope producers.

2. Develop improved means of producing and separating isotopes.

3. Promote privatization of isotope production and distribution.

4. Develop new uses for isotopes.

PERFORMANCE MEASURES:

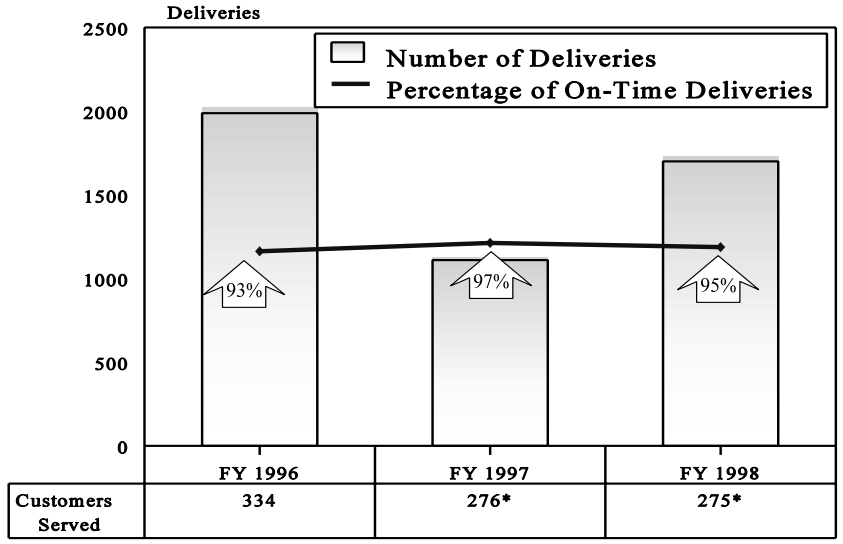
1. Privatize selected isotope activities by December 1998.

2. Achieve 95 percent on-time deliveries.

3. Respond to customer requests for information within 48 hours.

4. Keep customer complaints to less than four percent of all deliveries made.

5. Measure the difference between actual cost and schedule against approved baseline cost and schedule for Mo-99 start-up.



*Projection as of December1997

Customers Served

6. Measure the difference between actual cost and schedule against approved baseline cost and schedule for the construction of the Los Alamos Isotope Target Irradiation Station.

7. Number and quality of research isotopes supplied and research projects supported within available resources that promote research and development for selected isotope applications that are in the Nation's best interest.

SIGNIFICANT ACCOMPLISHMENTS AND PROGRAM SHIFTS:

- Operate the calutrons cost-effectively to provide satisfactory customer demand and maintain inventory.
- Continue privatization of selected isotope production activities.
- Establish Cooperative Research and Development Agreements (CRADAs) or other appropriate agreements to achieve private sector participation.
- Maintain financial viability of the revolving fund through its revenues and the Isotope Support appropriation.
- Start construction in FY 1999 of the Los Alamos Target Irradiation Station.

ISOTOPE PRODUCTION AND DISTRIBUTION PROGRAM

PROGRAM FUNDING PROFILE
(Dollars in Thousands)

Program	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Request
Isotope Production & Distribution	$ 22,704	$ 28,000	$3,473[1]	$31,473	$32,550
Less: Transfer from Isotope Support in Energy Supply R&D	-6,704	-7,000	170	-6,830	-7,450
Mo-99 Initiative	-5,000	-9,000	-3,643	-12,643	-9,000
Los Alamos Isotope Target Irradiation Station	0	0	0	0	-6,000
Revenues from Sales	**$ 11,000**	**$12,000**	**$0**	**$12,000**	**$10,100**

[1] Reflects a reduction for contractor training mandated by House Report language and an additional $3,700,000 provided through a transfer of appropriations to accelerate the capability to process 100 percent of the U.S. demand for Mo-99.

ISOTOPE PRODUCTION AND DISTRIBUTION PROGRAM

PROGRAM FUNDING BY SITE
(Dollars in Thousands)

Laboratory/Plant/Installation	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Request
Albuquerque Operations Office					
Los Alamos National Laboratory	$ 1,000	$1,700	$-50	$1,650	$ 7,800
Sandia National Laboratories	5,000[1]	9,000	3,643	12,643	9,000
Chicago Operations Office					
Brookhaven National Laboratory	1,000	1,600	0	1,600	2,000
Oak Ridge Operations Office					
Oak Ridge National Laboratory	1,000	2,800	-70	2,730	2,800
Richland Operations Office					
Pacific Northwest Laboratory	750	600	-50	550	250
All Other Sites	2,954	300	0	300	600
TOTAL	**$11,704**	**$16,000**	**$3,473[2]**	**$19,473**	**$22,450**

Note: Since the Isotope Program operates like a business, funding at isotope production sites can increase or decrease depending on demand, cash collections, production efficiencies, and availability of facilities.

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[1] Appropriation language mandated $5,000,000 for Mo-99 be used from available (operational) funding. Funds to continue production operations were made available from higher than expected revenues from FY 1996 sales.

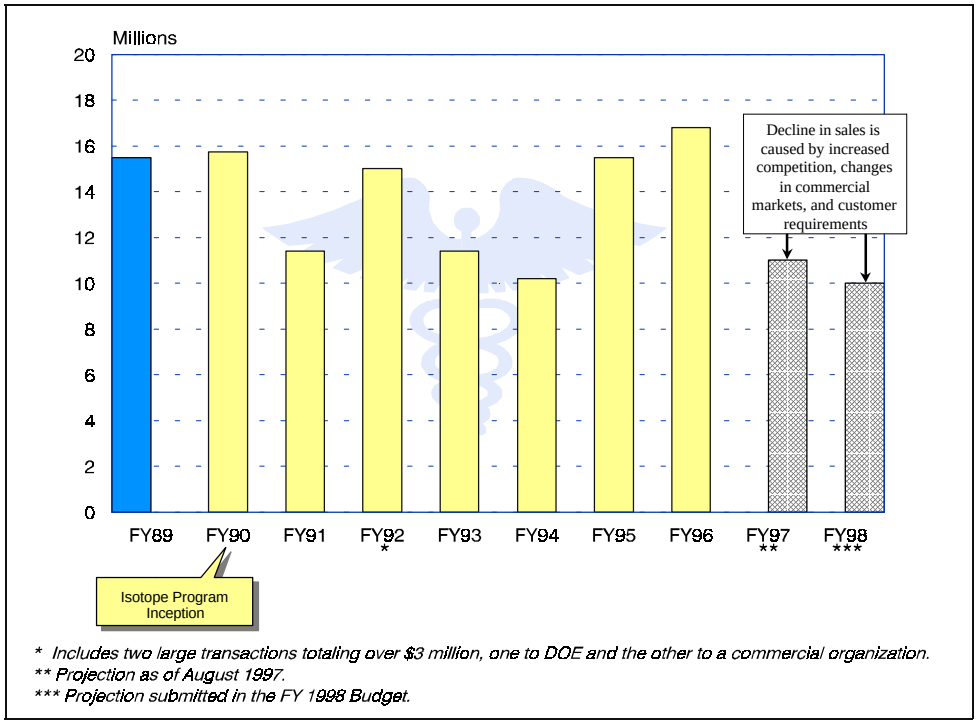
[2] Reflects a reduction for contractor training mandated by House Report language and an additional $3,700,000 provided through a transfer of appropriations to accelerate the capability to process 100 percent of the U.S. demand for Mo-99.

ISOTOPE PRODUCTION AND DISTRIBUTION PROGRAM
(Dollars in Thousands)

I. Mission Supporting Goals and Objective:

The Isotope Support decision unit will fund a payment into the Isotope Production and Distribution program (Isotope Program) to assure adequate supplies of isotopes necessary for the national interest, including the U.S. health care system. Specifically, requested funding is required to maintain financial continuity of radioactive and stable isotope production, processing, distribution, and associated services to commercial and research customers. Funding will also be used to provide radioisotopes and enriched stable isotopes for research and development, medical diagnosis and therapy, isotopes applications, to support nuclear medicine research, and to support administrative activities.

The Isotope Program operates under a revolving fund. Program costs are financed by revenues from the sale of isotopes and services and, through payments from the Isotope Support decision unit, which is funded through Congressional appropriations. The Isotope Program mission is to serve the national need for a reliable supply of isotope products and services for medicine, industry, and research. The program supports development of new or improved isotope products and services that enable medical diagnoses and therapy, and other applications that are in the national interest. Prices charged for these products and services may not always achieve full-cost recovery to the Government. The Department encourages private sector investment in new isotope production ventures and will sell or lease its facilities and inventories for commercial purposes. If private sector production becomes well established, DOE will no longer supply that isotope.



Isotope Sales Trend

II. Funding Schedule:

Many uses for isotopes have emerged over the past generation as an adjunct of nuclear research, defense, and power development programs. As the range of available isotopes and the recognized uses for them have increased, isotope applications have become necessary to achieve progress in medical research and practice, new industrial processes, and scientific methodology.

Program Activity	FY 1997	FY 1998	FY 1999	$ Change	% Change
Isotope Production & Distribution Program	$ 22,704	$ 31,473[1]	$ 32,550	+1,077	+3
Less: Transfer from Isotope Support in Energy Supply R&D	-6,704	-6,830	-7,450	+620	+9
Mo-99 Initiative	-5,000	-12,643	-9,000	-3,643	29
Los Alamos Isotope Target Irradiation Station	0	0	-6,000	+6,000	+100
Revenues from Sales	**$ 11,000**	**$ 12,000**	**$10,100**	**-1,900**	**-15**

[1] Reflects a reduction for contractor training mandated by House Report language and an additional $3,700,000 provided through a transfer of appropriations to accelerate the capability to process 100 percent of the U.S. demand for Mo-99.

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
Isotope Support			
• Assure an adequate supply of isotopes to be used for medical diagnoses and therapy, other applications in the national interest.	$6,704	$6,830	$7,450
-- Achieve and maintain 95 percent on-time deliveries.			
-- Provide quality products and services based on customer needs.			
-- Response to customer requests for information within 48 hours.			
-- Reduce and maintain the number of complaints to less than four percent of all deliveries made.			
-- Maintain financial viability of the Isotope Program/revolving fund.			
-- Issue four requests for proposals (RFP) for privatization of isotope activities by December 1997; hold RFP meetings and evaluate bids in FY 1998 and make awards as appropriate. Continue privatization of selected isotope production activities.			
-- Operate the calutrons as needed to meet customer demand and maintain stable isotope inventories. Because of the decline in sales and appropriations, the calutrons may be shut down in FY 1998.			
• Isotope Target Irradiation Station			
-- Start construction in FY 1999 of the Los Alamos Target Irradiation Station. To prevent a disruption of accelerator isotope production, construction completion and commissioning would occur in FY 2000. The new target irradiation facility will offer improved isotope quality with greater efficiency of operation because of lower power requirements, improved access to targets, and a more effective beam energy. This investment will be recovered through lower operating costs and increased revenues. This return on investment is based on several products that have shown strong commercial potential and market growth. The recovered funds will be invested in the further production of research isotopes that serve the U.S. medical research community.	$0	$0	$6,000

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
• Mo-99 Initiative			
-- Maintain nuclear facility operations, produce Mo-99 quality samples for industry evaluation and continue process verification and improvement to update Drug Master File for Food and Drug Administration (FDA) approval process, reconfigure reactor core for increased target irradiation capability, and prepare Hot Cell Facility for modifications to establish sustainable production capacity.	$5,000	$0	$0
-- Maintain nuclear facility operations and complete Hot Cell Facility modifications to establish full processing capacity.	$0	$12,643	$0
-- Maintain nuclear facility operations, install full-scale target production capability, produce Mo-99, as necessary, and upgrade the reactor pool cooling system to achieve increased reliability for production of 100 percent of the U.S. demand for Mo-99, if needed.	$0	$0	$9,000
Total Isotope Support	**$11,704**	**$19,473**	**$22,450**

EXPLANATION OF FUNDING CHANGES FROM FY 1998 TO FY 1999:

• Includes funding for startup and processing uranium-233 to obtain bismuth-213. Bismuth is an isotope used in clinical trial to treat cancer.	$+200
• Includes funding for extended Brookhaven Linear Isotope Producer runtime production of accelerator medical research isotopes.	$+250
• Reflects an increase in operating expenses.	$+170
• Reflects completion of major construction modification to Hot Cell Facility	$-3,643
• Construct the Los Alamos Isotope Target Irradiation Station for accelerator medical and research isotopes.	$+6,000
Total Funding Change, Isotope Production and Distribution	$+2,977

DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, Narrative in whole dollars)

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY
ISOTOPE SUPPORT

PROGRAM MISSION

Many uses for radioactive and enriched stable isotopes have emerged over the past generation as an adjunct of nuclear research, defense, and power development programs. As the range of available isotopes and the recognized uses for them have increased, isotope applications have become essential to progress in medical research and practice, new industrial processes, and scientific methodology. Therefore, an adequate supply of medical and research isotopes is essential to the Nation's health care system, and the basic research and industrial applications that contribute to national economic competitiveness.

The Isotope Program operates under the Isotope Production and Distribution revolving fund. Program costs are financed by revenues from the sale of isotopes and through payments from the Isotope Support decision unit, which is funded through a Congressional appropriation. The Isotope Program mission is to serve the national need for a reliable supply of isotope products and services for medicine, industry, and research. The program supports development of new or improved isotope products and services that enable medical diagnoses and therapy, and other applications that are in the national interest. Prices charged for these products and services may not always achieve full-cost recovery to the Government. The Department encourages private sector investment in new isotope production ventures and will sell or lease its facilities and inventories for commercial purposes. If private sector production of a given isotope becomes well established, DOE will no longer supply that isotope.

The Isotope Support decision unit will fund a payment into the Isotope Production and Distribution revolving fund (Isotope Program). Requested funding is required to maintain financial continuity of radioactive and stable isotope production, processing, distribution, and associated services to commercial and research customers. Funding will also be used to provide radioisotopes and enriched stable isotopes for research and development, medical diagnosis and therapy, isotopes applications, to support nuclear medicine research, and to support administrative activities.

The Department's request includes funding for a domestic capability to produce the vital medical isotope molybdenum-99 (Mo-99) to provide the United States with a source of this vital isotope until a more reliable commercial source of supply—possibly through the privatization of the Department's program—becomes available. The Department's intent is not to compete with commercial suppliers but end Federal

support for Mo-99 production when reliable, secure alternatives become available. This isotope is used in over 36,000 medical procedures per day in the U.S. to diagnose maladies such as cancer and heart disease. Sixty percent or more of the U.S. supply currently depends on a single aging reactor in Canada that will cease operation in the year 2000, and the U.S. medical community has expressed concern about the reliability of supply. The vulnerability of the Canadian supply was demonstrated when the labor force at the reactor site went on strike in June 1997. The Canadian supplier could only provide about 25 percent of their U.S. customers' needs for Mo-99 through backup arrangements with European producers. On September 11, 1996, the Department decided to produce Mo-99 and related medical isotopes. In early FY 1997, the Department produced several batches of Mo-99 quality evaluation samples. During the remainder of FY 1997, the Department reconfigured the Annular Core Research Reactor at Sandia National Laboratories, New Mexico, and prepared the hot cell for modifications to establish a sustainable Mo-99 production capacity. With an additional $3,700,000 made available in FY 1998 through a transfer of appropriations, the hot cell will be modified to establish a capacity to process the equivalent of 100 percent of the U.S. demand for Mo-99 by the end of FY 1998.

The Isotope Program budget also includes a request for a $6,000,000 construction project for the Los Alamos Isotope Target Irradiation Station. For more than 20 years, the Los Alamos National Laboratory has contributed to the highly successful growth in nuclear medicine by making available essential isotopes produced at a target irradiation station located at the Los Alamos Neutron Science Center accelerator. When the experiments under the Accelerator Production of Tritium Program sponsored by Defense Programs, are concluded in FY 1999, beam delivery to the current Isotope Production Facility will cease. The lack of isotopes produced by Los Alamos would cause a disruption of vital research, medical therapy and diagnosis. Over 30 isotopes are produced at Los Alamos; many of them are not available elsewhere. In addition to medical research applications, the isotopes are used for important biological and environmental research. Unless this project is completed, these isotopes will not be available to support vital research. Thus, relocation of the isotope production facility is essential to continued isotope production. The new target irradiation facility will offer improved isotope quality with greater efficiency and economy of operation because of lower power requirements, improved access to targets, and a more effective beam energy. The FY 1999 budget request under the Isotope Support decision unit is $22,450,000. This budget request combined with projected revenues of $10,100,000 should provide the revolving fund sufficient funding to meet total estimated program expenses of $32,550,000.

The GOAL of the Isotope Support program is to:

Provide financial viability of the Isotope Program.

ISOTOPE SUPPORT

PROGRAM FUNDING PROFILE
(Dollars in Thousands)

Program	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Request
Isotope Support					
Operating Expenses (Excluding Program Direction)	**$ 11,704**	**$ 16,000**	**$3,473**[1]	**$19,473**	**$22,450**

[1] Reflects a reduction for contractor training mandated by House Report language and an additional $3,700,000 provided through a transfer of appropriations to accelerate the capability to process 100 percent of the U.S. demand for Mo-99.

ISOTOPE SUPPORT

PROGRAM FUNDING BY SITE
(Dollars in Thousands)

Laboratory/Plant/Installation	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Request
Albuquerque Operations Office					
Los Alamos National Laboratory	$ 1,000	$1,700	$-50	$1,650	$7,800
Sandia National Laboratories	5,000[1]	9,000	3,643	12,643	9,000
Chicago Operations Office					
Brookhaven National Laboratory	1,000	1,600	0	1,600	2,000
Oak Ridge Operations Office					
Oak Ridge National Laboratory	1,000	2,800	-70	2,730	2,800
Richland Operations Office					
Pacific Northwest Laboratory	750	600	-50	550	250
All Other Sites	2,954	300	0	300	600
TOTAL	**$11,704**	**$16,000**	**$3,473[2]**	**$19,473**	**$22,450**

Note: *Since the Isotope Program operates like a business, funding at isotope production sites can increase or decrease depending on demand, cash collections, production efficiencies, and availability of facilities.*

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[1] Appropriation language mandated $5,000,000 for Mo-99. Funds to continue production operations were made available from higher than expected revenues from FY 1996 sales.

[2] Reflects a reduction for contractor training mandated by House Report language and an additional $3,700,000 provided through a transfer of appropriations to accelerate the capability to process 100 percent of the U.S. demand for Mo-99.

ISOTOPE SUPPORT
(Dollars in Thousands)

I. Mission Supporting Goals and Objective:

The Department, through the Isotope Program, provides radioactive and stable isotope products and associated services to a wide and varied domestic and international market. Ultimate applications of isotope products include medical research and health care, industrial research and manufacturing, education, and national defense. The Isotope Program mission is to serve the national need for a reliable supply of isotope products and services for medicine, industry, and research. The program supports development of new or improved isotope products and services that enable medical diagnoses and therapy, and other applications that are in the national interest. Prices charged for these products and services may not always achieve full-cost recovery to the Government. The Department encourages private sector investment in new isotope production ventures and will sell or lease its facilities and inventories for commercial purposes. If private sector production becomes well established, DOE will no longer supply that isotope.

II. Funding Schedule:

Program Activity	FY 1997	FY 1998	FY 1999	$ Change	% Change
Isotope Production & Distribution Operations	$ 6,704	$6,830[1]	$ 7,450	$+620	+9
Mo-99 Initiative	5,000	12,643	9,000	-3,643	-29
Los Alamos Isotope Target Irradiation Station	0	0	6,000	+6,000	+100
Subtotal, Isotope Support (excluding program Direction)	**$ 11,704**	**$19,473**	**$22,450**	**$+2,977**	**+15**

[1] Reflects a reduction for contractor training mandated by House Report language and an additional $3,700,000 provided through a transfer of appropriations to accelerate the capability to process 100 percent of the U.S. demand for Mo-99.

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
Isotope Support			
• Assure an adequate supply of isotopes to be used for medical diagnoses and therapy, other applications in the national interest.	$6,704	$6,830	$7,450
-- Achieve and maintain 95 percent on-time deliveries.			
-- Reduce and maintain the number of complaints to less than four percent of all deliveries made.			
-- Maintain financial viability of the Isotope Program/revolving fund.			
-- Issue four requests for proposals (RFP) for privatization of isotope activities by December 1997; hold RFP meetings and evaluate bids in FY 1998 and make awards as appropriate. Continue privatization of selected isotope production activities.			
-- Operate the calutrons as needed to meet customer demand and maintain stable isotope inventories. Because of the decline in sales and appropriations, the calutrons may be shut down in FY 1998.			
• Isotope Target Irradiation Station			
-- Start construction in FY 1999 of the Los Alamos Target Irradiation Station. To prevent a disruption of accelerator isotope production, construction completion and commissioning would occur in FY 2000. The new target irradiation facility will offer improved isotope quality with greater efficiency of operation because of lower power requirements, improved access to targets, and a more effective beam energy. This investment will be recovered through lower operating costs and increased revenues. This return on investment is based on several products that have shown strong commercial potential and market growth. The recovered funds will be invested in the further production of research isotopes that serve the U.S. medical research community.	$0	$0	$6,000

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
• Mo-99 Initiative			
-- Maintain nuclear facility operations, produce Mo-99 quality samples for industry evaluation and continue process verification and improvement to update Drug Master File for Food and Drug Administration (FDA) approval process, reconfigure reactor core for increased target irradiation capability, and prepare Hot Cell Facility for modifications to establish sustainable production capacity.	$5,000	$0	$0
-- Maintain nuclear facility operations and complete Hot Cell Facility modifications to establish full processing capacity.	$0	$12,643	$0
-- Produce Mo-99, as necessary, install full-scale target production capability, and upgrade the reactor pool cooling system to achieve increased reliability for production of 100 percent of the U.S. demand for Mo-99, if needed.	$0	$0	$9,000
Total Isotope Support	**$11,704**	**$19,473**	**$22,450**

EXPLANATION OF FUNDING CHANGES FROM FY 1998 TO FY 1999:

• Includes funding for startup and processing of uranium-233 to obtain bismuth-213. Bismuth is an isotope used in clinical trial to treat cancer.	$+200
• Includes funding for extended Brookhaven Linear Accelerator Isotope Producer runtime for production of accelerator medical research isotopes.	$+250
• Reflects an increase in operating expenses.	$+170
• Reflects completion of major construction modification to Hot Cell Facility.	$-3,643
• Construct the Los Alamos Isotope Target Irradiation Station for accelerator medical and research isotopes.	$+6,000
Total Funding Change, Isotope Support	$+2,977

DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, Narrative in whole dollars)

ISOTOPE SUPPORT
PROGRAM DIRECTION

I. Mission Supporting Goals/Ongoing Responsibilities:

The Isotope Support Program Direction account supports salaries, benefits, travel, and miscellaneous supplies or services to Headquarters and Operations Office personnel providing technical direction to the Office of Isotope Production and Distribution. This activity also includes funding for administrative expenses, such as: training, computer support, including hardware and software acquisitions, modifications, and other telecommunications services for workstations. In FY 1997 a Working Capital Fund (WCF) was established by the Department's Office of Human Resources and Administration to provide funding for mandatory administrative costs, such as rent and utilities. Beginning in FY 1998, program direction funding for Isotope Support is included in the single Office of Nuclear Energy, Science and Technology program direction account.

NE Headquarters has aggressively streamlined operations. On-board staff have been reduced from 258 in August 1993 to a current level of 129 (a 50 percent reduction). The Office is also meeting other streamlining goals. For example, senior executive and GS 15/14 positions have been reduced by 49 percent; the employee to supervisor ratio has been increased from 3:1 to 12.1; overall NE Headquarters travel has been reduced by about 30 percent from FY 1995 and NE Headquarters support services contracting has been reduced by about 40 percent from FY 1995.

II. Funding Table:

	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Request
Summary - Budget					
Headquarters					
Field					
TOTAL, AVAILABLE	$ 1,550	$0	$ 0	$0	$ 0
BUDGET	135	0	0	0	0
Adjusted-Unobligated/Uncosted	**$ 1,685**	**$0**	**$ 0**	**$0**	**$ 0**
Carryover					
NEW BUDGET	- 685	0	0	0	0
AUTHORITY	**$1,000**	**$0**[1]	**$ 0**	**$ 0**	**$ 0**[1]
Albuquerque					
Salary and Benefits	$130	$0	$0	$0	$0
Travel	5	0	0	0	0
Support Services	0	0	0	0	0
Other Related Expenses	0	0	0	0	0
Total	$135	$0	$0	$0	$0
Staffing	1	0	0	0	0

1 Funding is provided under the Nuclear Energy R&D account.

	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Request
Headquarters					
Salary and Benefits	$ 960	$0	0	$0	$0
Travel	60	0	0	0	0
Support Services	225	0	0	0	0
Other Related Expenses	305	0	0	0	0
Total	$ 1,550	$0	$0	$0	$0
Staffing	10	0	0	0	0
TOTAL AVAILABLE BUDGET	$ 1,685	$ 0	$ 0	$ 0	$ 0
Adjustment-Unobligated/Uncosted Carryover	-685	0	0	0	0
NEW BUDGET AUTHORITY	$ 1,000	$ 0	$ 0	$ 0	$ 0

III. Performance Summary:

FY 1997 Measurable Performance Activities:

The key benchmarks by which NE measured its FY 1997 streamlining performance are:

- Reduced senior executive positions to four (a 82 percent reduction since FY 1993), and reducing senior grade level (SES/15/14) positions by 49 percent since FY 1993
- Continued to exceed National Performance Review streamlining goals to reduce administrative positions by 50 percent
- Exceeded DOE employee to supervisor ratio target of 11:1
- Continued to reduce reliance on support service contractors by about 40 percent and to reduce Headquarters travel by about 30 percent from FY 1995 levels
- Initiated funding for the mandated DOE Working Capital Fund for administrative costs such as rent and utilities
- Provided funding for salaries and benefits for two overseas personnel working on international safety and technology collaboration issues

EXPLANATION OF FUNDING CHANGES FROM FY 1998 TO FY 1999:

N/A

ISOTOPE SUPPORT

Program Direction

Headquarters - Support Services
($ in thousands)

SUPPORT SERVICES-HQ	FY 1997	FY 1998	FY 1999	Change
Technical Support Services				
Environmental Analysis	$ 225	$ 0	$ 0	$ 0
TOTAL SUPPORT SERVICES	**$ 225**	**$ 0**	**$ 0**	**$ 0**

ISOTOPE SUPPORT

Program Direction

Headquarters - Other Related Expenses
($ in thousands)

OTHER RELATED EXPENSES	FY 1997	FY 1998	FY 1999	Change
Working Capital Fund	$ 0	$ 0	$ 0	$ 0
ADP/TeleVideo Hardware and Software Procurement/Maintenance	20	0	0	0
Training	10	0	0	0
Other Miscellaneous Expenses	275	0	0	0
TOTAL OTHER RELATED EXPENSES	**$ 305**	**$ 0**	**$ 0**	**$ 0**

DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT

CONSTRUCTION PROJECT DATA SHEET
ISOTOPE PRODUCTION & DISTRIBUTION
(Tabular dollars in thousands. Narrative material in whole dollars.)

1.	Title and Location of Project:	Isotope Production Facility, TA-53 Los Alamos National laboratory	2a. Project No.: 99-E-201 2b. Construction Funded
3a.	Date A-E Work Initiated	(Title I Design Start Scheduled): 1st Qtr. FY 1998 (Title II Design Start Scheduled): 2nd Qtr. FY 1998	5. Previous Cost Estimate: Total Estimated Cost (TEC): $12,065
3b.	A-E Work (Title I & II) Duration: 9 months		Total Project Cost (TPC): $12,843
4a.	Date Physical Construction Starts:	1st Qtr. FY 1998	6. Current Cost Estimate: TEC -- $ 12,065
4b.	Date Construction Ends: 2nd Qtr. FY 2000		

7. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligation	Costs
Previous Years	$0	$0	$0	$0
1999	$6,000[1]	$0	$6,000	$6,000
2000	$6,065[1]	$0	$6,065	$6,065

[1] This represents those Capital construction Funds needed to issue a construction contract for the facility.

1.	Title and Location of Project:	Isotope Production Facility, TA-53 Los Alamos National laboratory	2a. 2b.	Project No.: 99-E-201 Construction Funded

8 Project Description, Justification, and Scope:

This project proposes to build a new target irradiation facility for the production of radioisotopes at the Los Alamos Neutron Science Center (LANSCE) accelerator. The proposed project will include installation of a beam switching device at the point where the beam is diverted, construction of a short beam line to the targeting area, and construction of a target handling facility with a beam stop. This facility will utilize a 100 MeV proton beam obtained by diverting a portion of the main LANSCE beam before it enters the final portion of the accelerator and directing it to a new targeting area dedicated to isotope production. In most cases production of radioisotopes is both more efficient and more selective with low beam energies (100 MeV) than with the high beam energy currently being used at Los Alamos (800 MeV). Therefore, once the new facility is in operation, the program will continue to produce most of the same isotopes, but with greater efficiency.

The proposed target irradiation facility will replace the existing Isotope Production Facility, which is located at TA-53 in building MPF-3 at the east end of Area A of LANSCE. However, Area A, where the existing Isotope Production Facility is located, will be rendered inoperable by the proposed reconfiguration of the LANSCE accelerator complex thereby, shutting down the ability of Los Alamos to produce these isotopes.

The Isotope Production and Distribution Program has been one of the more successful and visible ongoing programs at Los Alamos. It has used the unique capabilities of the Laboratory's facilities and staff to respond to a well recognized national need for radioisotope production and development. Today there are many external users in industry, research institutions, the medical community, academia, and government who purchase the 30+ radioisotopes produced in the Isotope Production Facility at LANSCE. Because the current Laboratory plan to redirect the focus of the LANSCE accelerator complex toward neutron science, this has placed the use of the existing Isotope Production Facility in jeopardy. This change in focus can be viewed as an opportunity for the Isotope Production and Distribution Program to construct a dedicated radioisotope production facility which can operate on a noninterference basis with any of the proposed LANSCE configurations while at the same time operating at a lower beam intensity than the present Isotope Production Facility. This new facility would be a large step forward in the continued development of the Los Alamos Isotope Production and Distribution Program, which responds to the Department of

1.	Title and Location of Project:	Isotope Production Facility, TA-53 Los Alamos National laboratory	2a. 2b.	Project No.: 99-E-201 Construction Funded

8 Project Description, Justification, and Scope: (continued)

Energy's stated interest in maintaining a reliable domestic source of radioisotopes. Reliable supply of these isotopes is crucial for the future of industry, research and development, and education, as well as for the established applications of radioactive isotopes.

The proposed facility would be located on the north side of the LAMPF linac building near the west end of the accelerator complex. A beam line would be built from the transition region between the Drift Tube Linac and the Side-Coupled Cavity Linac extending to the northeast to a targeting facility located to the north of Sector A. The new beam line will be approximately 100 feet in length with the beam line center expected to be between 20 and 35 feet below grade. The targeting facility would be located within a new building located above the end of the beam line. This building will be approximately 3000 square feet in area, and will house all the necessary equipment and control systems for carrying out target irradiations. This building will include a high bay area with overhead cranes.

This project will include design, excavation, and construction of the beam line tunnel, design and construction of the beam line and its control systems, design and construction of the building to house the targeting facility, and design and construction of the target handling and control systems. The beam tunnel construction modification must be completed during the LANSCE accelerator outage in 1999.

1.	Title and Location of Project:	Isotope Production Facility, TA-53 Los Alamos National laboratory	2a. 2b.	Project No.: 99-E-201 Construction Funded

9. Details of Cost Estimate[2]:	Item Cost	Total Cost
a. Design and Management Costs		$3,476
1. Engineering design and inspection at approximately 19 percent of construction and SFE costs)	1,151	
2. SFE Engineering Design and inspection (approximately 21.5 percent of SFE costs)	1,306	
3. Construction management costs (approximately 4.7 percent t of construction costs)	290	
4. Project management (12 percent of construction and SFE costs)	729	
b. Land and land rights		0
c. Construction costs		3,602
1. Improvements to land	625	
21. Buildings	2,916	
3. Other structures	0	
4. Utilities	61	
5. Special facilities	0	
d. Standard equipment		0
e. Special Facilities Equipment (SFE) (Beam Line, Hot Cell & Target Shielding)		2,473
f. Removal cost less salvage		0
g. Design and project liaison, testing, checkouts and acceptance		0
h. Escalation and burdens		963
Subtotal		10,514
i. Contingencies (approximately 14.8 percent of the subtotal)		1,551
j. Total line item cost (Section 11.a. 1(a))		12,065
k. Non-Federal contribution		0
l. Net Federal total estimated cost (TEC)		$12,065

[2] The Cost Estimate is based on the Final CDR estimate dated August 7, 1997.

1.	Title and Location of Project:	Isotope Production Facility, TA-53 Los Alamos National laboratory	2a. 2b.	Project No.: 99-E-201 Construction Funded

10. Method of Performance:

Design and inspection will be performed under a negotiated architect-engineer contract. Construction of the project will be accomplished by fixed-price contracts and subcontracts awarded on the basis of competitive bidding.

1.	Title and Location of Project:	Isotope Production Facility, TA-53 Los Alamos National laboratory	2a. 2b.	Project No.: 99-E-201 Construction Funded

11. Schedule of Project Funding and Other Related Funding Requirements:

	Previous Years	FY 1997	FY 1998	FY 1999	FY 2000	Outyears	Total
a. Total project costs							
1. Total facility costs							
(a) Line item (Section 9.1)	$0	$0	$0	$6,000	$6,065	$0	$12,065
(b) Operating expense funded equipment	0	0	0	0	0	0	0
(c) Inventories	0	0	0	0	0	0	0
Total facility cost (Federal and Non-Federal)	$0	$0	$0	$6,000	$6,065	$0	$12,065
2. Other project costs							
(a) R&D necessary to complete project	$0	$0	$0	$0	$0	$0	$0
(b) Conceptual design costs	0	545	0	0	0	0	545
(c) Decontamination and decommissioning	0	0	0	0	0	0	0
(d) NEPA documentation costs	0	2	0	0	0	0	2
(e) Other project-related costs	37	139	0	0	55	0	231
Total other project costs	$37	$686	$0	$0	$55	$0	$778
Total project cost	$37	$686	$0	$6,000	$6,120	$0	$12,843
(f) Non-Federal contribution	0	0	0	0	0	0	0
Net Federal total project cost (TPC)	$37	$686	0	$6,000	$6,120	$0	$12,843

1.	Title and Location of Project:	Isotope Production Facility, TA-53 Los Alamos National laboratory	2a. 2b.	Project No.: 99-E-201 Construction Funded

11. Schedule of Project Funding and Other Related Funding Requirements: (continued)

b. Related annual funding (estimated life of project--30 years)

1.	Facility operating costs	$285
2.	Facility maintenance and repair costs	111
3.	Programmatic operating expenses directly related to the facility	0
4.	Capital equipment not related to construction but related to the programmatic effort in the facility	0
5.	GPP or other construction related to the programmatic effort in the facility	0
6.	Utility costs	39
7.	Other costs	0
	Total related annual funding	$435

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements:

a. Total project costs

1 Total facility costs

(a) Line item - As described

(b) Inventories - none

1.	Title and Location of Project:	Isotope Production Facility, TA-53 Los Alamos National laboratory	2a. 2b.	Project No.: 99-E-201 Construction Funded

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements: (continued)

2. Other project costs

(a) R&D necessary to complete project - none

(b) Conceptual design - A detailed Engineering Study and Project Definition Study have been completed

(c) Decontamination and decommissioning - none

(d) NEPA documentation costs - includes studies for the DOE Environmental Checklist (DEC), a verification of the CAT X determination, and site surveys for SWMU determination

(e) Other project-related costs -During startup, ESH support is needed to perform safety assessments in order to engineer in the safety envelope prior to design. At the end of the project the amount reflects the effort required to perform readiness reviews and to commission the facility to operations.

b. Related annual funding: Includes one full time FTE to manage the facility, general repairs, and utility costs.

DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY, RESEARCH AND DEVELOPMENT
(Tabular dollars in thousands, Narrative in whole dollars)

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY
PROGRAM DIRECTION

I. Mission Supporting Goals/Ongoing Responsibilities:

The Office of Nuclear Energy, Science and Technology (NE) Program Direction account funds expenses associated with the technical direction and administrative support of NE programs

Program Direction has been grouped into four categories:

Salaries and Benefits provides salary and benefits funding for Headquarters and Operations Office personnel providing technical direction to Nuclear Energy Research and Development activities, Isotope Production and Distribution, Uranium programs, as well as energy research reactor operations (which are funded by the Office of Energy Research), transition activities at the Fast Flux Test Facility (FFTF), the critical U. S. Government activity to cooperate with the countries of the former Soviet Union and Central and Eastern Europe to enhance nuclear safety, and activities funded by other Federal agencies and foreign governments. This category includes funding for other personnel compensation, such as, cash incentive awards and overtime pay. This category also includes payments for voluntary separation incentives. In FY 1997, salaries and benefits were provided from the NE Program Direction account in support of the reassignment of two overseas personnel working on international safety and technology collaboration issues. This will continue through FY 1998 and FY 1999.

Travel includes funding for transportation of Headquarters and Operations office employees associated with NE programs, their per diem allowances while in authorized travel status, and other expenses incidental to travel.

Support services includes funding for technical and management support services provided to NE Headquarters and Operations office employees.

Other related expenses includes funding for administrative expenses, such as: training, computer hardware and software acquisitions, modifications, and publication and subscription services. In FY 1997, the Department's central administrative office established a Working Capital Fund to provide funding for mandatory administrative costs, such as, rent and telephone services. Payments into this fund are continued in FY 1998 and 1999 as part of the other related expenses category.

II. Funding Table: (Note: FY 1997 staffing and budget amounts do not include NE staff and funding included in Program Direction accounts for Isotopes and Uranium programs)

	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Summary - Budget					
Headquarters	$ 13,103	$ 17,040	0	0	$ 17,142
Field	2,195	5,915	0	0	6,408
NEW BUDGET AUTHORITY	**$ 15,298**	**$22,955**	**0**	**0**	**$ 23,550**
Prior Year Balances Available	1,244	1,955	0	0	0
TOTAL AVAILABLE BUDGET	**$ 14,054**	**$ 21,000**	**0**	**0**	**$ 23,550**
Summary - Staffing					
Headquarters	101	115	0	0	109
Field	29	58	0	0	52
TOTAL	130	173	0	0	161
Detailed Breakout					
Albuquerque					
Salary and Benefits	$ 0	$ 135	0	0	$ 140
Travel	0	10	0	0	10
Support Services	0	0	0	0	0
Other Related Expenses	0	0	0	0	0
Total	$ 0	$ 145	$ 0	$ 0	$ 150
Staffing	0	1	0	0	1

	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Chicago					
Salary and Benefits	$ 1,047	$ 1,260	$ 0	$ 0	$ 1,320
Travel	68	80	0	0	80
Support Services	25	33	0	0	33
Other Related Expenses	0	27	0	0	27
Total	$ 1,140	$ 1,400	$ 0	$ 0	$ 1,460
Staffing	11	12	0	0	11
Idaho					
Salary and Benefits	$ 92	$ 95	$ 0	$ 0	$ 105
Travel	8	20	0	0	10
Support Services	0	1	0	0	1
Other Related Expenses	- 455	2	0	0	2
Total	$ - 355	$ 118	$ 0	$ 0	$ 118
Staffing	1	1	0	0	1
Oak Ridge					
Salary and Benefits	$ 849	$ 2,400	$ 0	$ 0	$ 2,600
Travel	25	135	0	0	115
Support Services	101	57	0	0	357
Other Related Expenses	-145	782	0	0	690
Total	$ 830	$ 3,374	$ 0	$ 0	$ 3,762
Staffing	10	35	0	0	30

	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Oakland					
Salary and Benefits	$ 85	$ 200	$ 0	$ 0	$ 210
Travel	6	35	0	0	35
Support Services	0	10	0	0	10
Other Related Expenses	-21	13	0	0	13
Total	$ 70	$ 258	$ 0	$ 0	$ 268
Staffing	1	3	0	0	3
Ohio					
Salary and Benefits	$ 0	$ 0	$ 0	$ 0	$ 0
Travel	0	10	0	0	0
Support Services	0	0	0	0	0
Other Related Expenses	0	0	0	0	0
Total	$ 0	$ 10	$ 0	$ 0	$ 0
Staffing	0	0	0	0	0
Richland					
Salary and Benefits	$ 490	$ 600	$ 0	$ 0	$ 640
Travel	20	10	0	0	10
Support Services	0	0	0	0	0
Other Related Expenses	0	0	0	0	0
Total	$ 510	$ 610	$ 0	$ 0	$ 650
Staffing	6	6	0	0	6

	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Headquarters					
Salary and Benefits	$ 10,353	$ 13,223	$ 0	$ 0	$ 12,497
Travel	384	537	0	0	745
Support Services	131	285	0	0	905
Other Related Expenses	2,235	2,995	0	0	2,995
Total	$ 13,103	$ 17,040	$ 0	$ 0	$ 17,142
Staffing	101	115	0	0	109
TOTAL AVAILABLE BUDGET	$ 15,298	$ 22,955	$ 0	$ 0	$ 23,550
Less Net Use of Prior Year Balances	- 1,244	-1,955	0	0	0
NEW BUDGET AUTHORITY	$ 14,054	$ 21,000	$ 0	$ 0	$ 23,550

III. Performance Summary:

	FY 1997	FY 1998	FY 1999
Salaries and Benefits:	$12,916	$17,913	$17,512
NE Headquarters has aggressively streamlined operations. On-board staff have been reduced from 258 in August 1993 to a current level of 129 (a 50 percent reduction). The Office is also meeting other streamlining goals. For example senior executive and GS 15/14 positions have been reduced by 50 percent and the employee to supervisor ratio has been increased from 3:1 to 12:1. NE field staffing has also been reduced from 75 in August 1995 to a current level of 56. The current assignment of NE field employees includes Chicago Operations Office (12), Idaho Operations Office (1), Oakland Operations Office (3), Oak Ridge Operations Office (34), and the Richland Operations Office (6).			
Travel:	$511	$837	$1,005
In accordance with the Departmental initiative to reduce travel costs, a series of actions have been taken to reduce Headquarters travel about 30 percent from FY 1995. Guidelines were issued to eliminate unnecessary or low value travel, multiple travelers to the same location/meeting are being limited. Conference attendance is being severely limited. Use of video-conferencing is encouraged whenever possible, and all NE Headquarters employees travel requests are reviewed and approved by the Director, NE or his designee. NE field employees travel costs are similarly included in the Departmental travel costs reduction initiative.			

	FY 1997	FY 1998	FY 1999
Support Services:	$257	$386	$1,306
In accordance with the Departmental initiative to reduce the level of support services contracting, NE has reduced Headquarters support services contracting by about 40 percent from FY 1995. Support services for NE field employees are in accordance with Operations Office plans to reduce support services contracting as part of the same Departmental support services cost reduction initiative.			
Other Related Expenses:	$1,614	$3,819	$3,727
The single largest expenditure in the other related expenses category is earmarked for the Headquarters Working Capital fund. The FY 1998 and FY 1999 estimates include $1,575 to cover Working Capital Fund charges for NE Headquarters employees. These infrastructure/administrative support charges have been reduced from the FY 1997 Working Capital Fund expenditures of $2,176. Remaining expenditures for administrative expenses such as, ADP hardware and software support, training, periodicals and subscriptions, etc., are projected to remain constant with FY 1998 levels.			

IV. EXPLANATION OF FUNDING CHANGES FROM FY 1998 TO FY 1999:

Decrease in salaries and benefits commensurate with Department's strategic alignment downsizing strategies.	$-401
Increase attributable primarily to funding Headquarters travel expenditures on an annual (one-year) appropriation basis and discontinuing reliance on use of prior year carryover funds.	$+168
Increase attributable primarily to reassignment of support services costs from program budgets to Program Direction.	$+920
Decrease in other related expenses commensurate with downsizing strategies.	$-92
Total	**$+595**

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY

Program Direction

Headquarters - Support Services
($ in thousands)

SUPPORT SERVICES-HQ	FY 1997	FY 1998	FY 1999	Change
Technical Support Services				
Environmental Analysis	$ 0	$ 235	$ 235	$ 0
Management Support Services				
Management Studies; ADP services	131	50	670	+620
TOTAL SUPPORT SERVICES	**$ 131**	**$ 285**	**$ 905**	**$+620**

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY

Program Direction

Headquarters - Other Related Expenses
($ in thousands)

OTHER RELATED EXPENSES

	FY 1997	FY 1998	FY 1999	CHANGE
Working Capital Fund	$ 1,775	$ 1,575	$ 1,575	$ 0
ADP/TeleVideo Hardware and Software Procurement/Maintenance	250	325	325	0
Subscriptions/Publications	50	50	50	0
Training	55	80	80	0
Departmental Administrative Fee	0	125	125	0
Other Miscellaneous Expenses	55	754	754	0
Office Logistical Support	50	76	76	0
TOTAL OTHER RELATED EXPENSES	**$ 2,235**	**$ 2,995**	**$ 2,995**	**$ 0**

DEPARTMENT OF ENERGY
FY 1999 CONGRESSIONAL BUDGET REQUEST
ENERGY SUPPLY RESEARCH AND DEVELOPMENT ACTIVITIES
(Tabular dollars in thousands, Narrative in whole dollars)

URANIUM PROGRAMS

PROGRAM MISSION

This program supports important government activities related to the Federal uranium enrichment program that were not transferred to the United States Enrichment Corporation (USEC). In particular, this program addresses the facility and environmental legacies associated with the enrichment program, management of assets, and conduct of important national security activities.

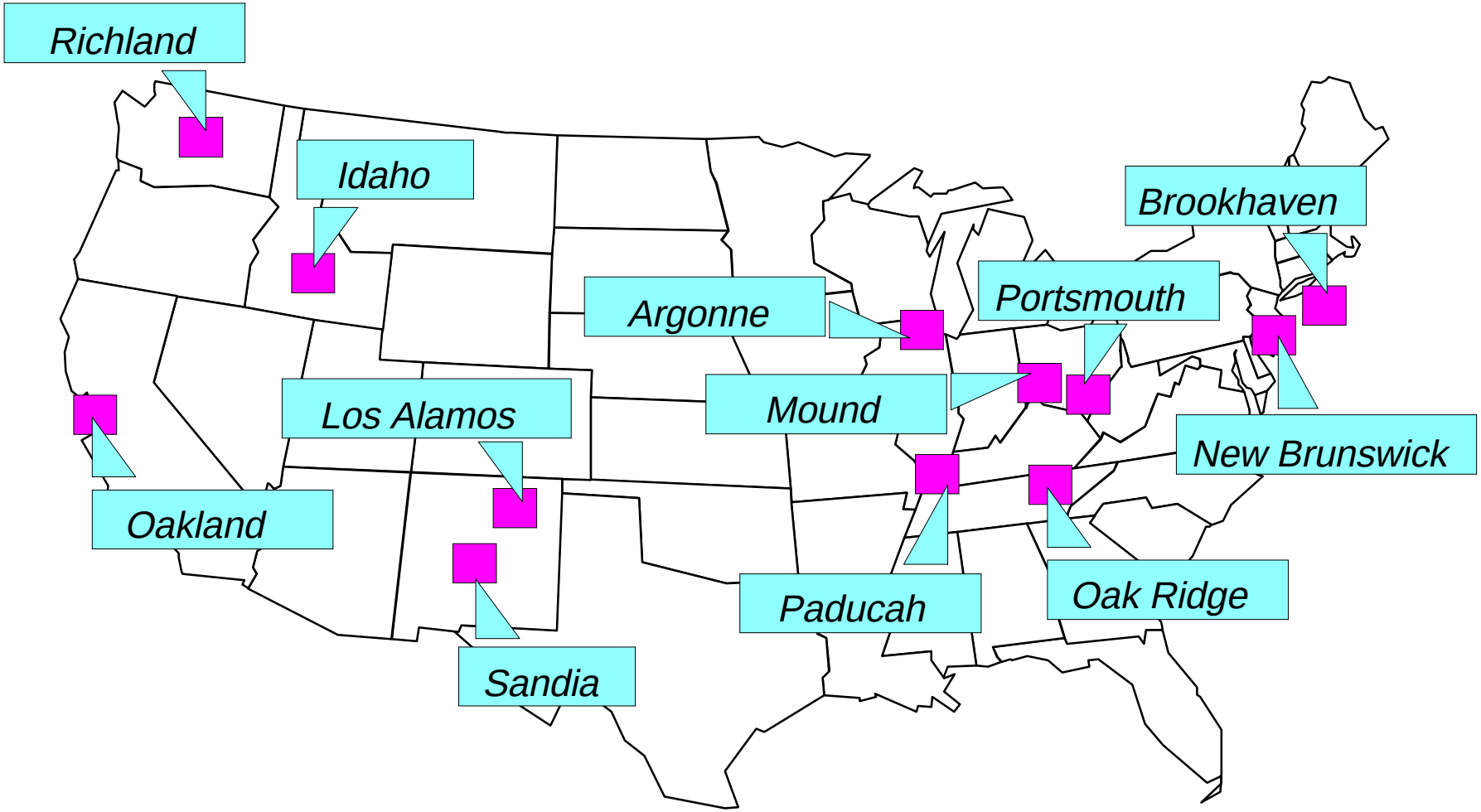
Uranium Programs' principal responsibility is to assure effective management of the Department's excess uranium and depleted uranium hexafluoride inventories. Our major mission for depleted uranium is to ensure the 47,000 depleted uranium hexafluoride cylinders are maintained in an environmentally safe manner by conducting annual cylinder inspections, and exploring, developing and implementing options to repair cylinders exhibiting accelerated corrosion. As part of the responsibility for the management of depleted uranium hexafluoride inventories, the Department will complete the long term management strategy and issue a Record of Decision by early FY 1999. In addition, the Department is establishing a small development program with the objective of reducing the long term cost of converting depleted uranium hexafluoride to a stable, inert form and facilitating its disposition. Alternative uses for depleted uranium hexafluoride will also be explored. Activities at the gaseous diffusion plants in Portsmouth, Ohio; Paducah, Kentucky; and Oak Ridge, Tennessee covered under the Department of Energy (DOE)/USEC Lease Agreement and uranium enrichment facilities not leased by USEC are also provided for under this program. These activities are maintenance of facilities and grounds, cleaning legacy PCB spills in the leased areas of the diffusion site consistent with the Federal Facilities Compliance Act, guarding and protecting HEU material stored at the Portsmouth site, reducing the financial liabilities created by the establishment of the USEC by paying post retirement life and medical costs for retired contractor personnel at the diffusion sites and power suppliers. Lastly, the Department assists the NRC in preparing annual congressional reports on the status of the diffusion plants and validates USEC cost of nuclear safety upgrades that were required as a condition of NRC certification.

Uranium Programs' activities are also focused on cooperation and coordination with other Departmental Offices and Government Agencies in the implementation of U.S. Non-Proliferation Policy by continuing to assure that Russian low enriched uranium (LEU) sold to the USEC is derived from highly enriched uranium (HEU) removed from dismantled Russian nuclear weapons.

This program also provides the means by which the Department plans to sell its excess natural and low enriched uranium over the next several years. The USEC Privatization Act and the Energy Policy Act of 1992 allow the Department of Energy to sell excess uranium stockpiles subject to conditions in those Acts. Included in the material planned for sale by the Department over the next five years is Russian natural uranium transferred to the Department from USEC under the USEC Privatization Act. All of the uranium to be sold under this program is currently held at the Portsmouth Gaseous Diffusion Plant or Paducah Gaseous Diffusion Plant. The Department has issued an Environmental Assessment (EA) and Finding of No Significant Impact of the Department's proposed sale of surplus natural and low enriched uranium. The Department is currently engaged in negotiating a settlement agreement with the USEC to define and set the liquidation terms for the Department's nuclear safety and Determination Order liabilities. The Department's uranium inventories are expected to be used to liquidate these liabilities. Uranium inventories not needed to liquidate these liabilities will be sold over the next several years andthe revenues deposited into the Treasury.

Before the Department can sell any of its excess natural or low enriched uranium, the USEC Privatization Act requires the Secretary to determine that "...the sale of the material will not have an adverse material impact on the domestic mining, conversion, or enrichment industry, taking into account the sales of uranium under the Russian HEU Agreement and the Russian Suspension Agreement...". In total, the Department currently has available for future sale the equivalent of 21.5 million pounds of natural uranium in the forms of natural and low enriched uranium hexafluoride from its stockpile of uranium assets.

FY 1997 funding for Uranium Programs was provided under the Uranium Supply and Enrichment Activities Appropriation.



Uranium Program Sites

The GOALS of the Uranium Programs (UP) are to:

1. Manage Office of Nuclear Energy, Science and Technology (NE) facilities at Portsmouth, Ohio; Paducah, Kentucky; and Oak Ridge, Tennessee including PCB spills that originate within facilities leased to USEC in a safe, economic, and environmentally-sound manner.

2. Cooperate and coordinate with other Departmental offices and government agencies in the implementation of U.S. nonproliferation policy, especially the full implementation of Highly Enriched Uranium transparency program agreements/programs with Russia.

3. Prudently manage the Department's inventory of excess natural and low enriched uranium, including Russian uranium transferred to the Department from USEC as required by the USEC Privatization Act and ensure the sale of these inventories is accomplished in a manner which will maximize the return to the U.S. government while ensuring they do not have an adverse material impact on domestic uranium industries.

4. Implement the record of decision related to the long term management of DOE's inventory of depleted uranium by ensuring that the 47,000 depleted uranium hexafluoride cylinders are maintained in an environmentally safe manner by conducting annual inspections and exploring options to effectively treat cylinders that exhibit accelerated corrosion, by exploring and developing promising uses of depleted uranium, and conducting demonstration projects with industry for the conversion of UF_6 to uranium oxide and/or metal.

The OBJECTIVES related to these goals are:

1. Manage and dispose of NE's uranium and depleted uranium hexafluoride (DUF_6) inventories in a safe, economic, and environmentally-sound manner.

2. Monitor the Russian processes involved in producing low enriched uranium (LEU) purchased from Russia to assure that the material is derived from highly enriched uranium (HEU) from dismantled Russian nuclear weapons.

3. Manage the pre-existing liabilities incurred before the creation of the USEC in 1993 and manage the additional liabilities as a result of the 1996 legislation supporting the privatization of USEC.

4. Manage the collection and disposal of PCB spills at the leased gaseous diffusion plants and maintain the non-leased facilities in a safe and environmentally-sound condition.

The OBJECTIVES related to these goals are: (continued)

5. Help meet the Department's commitments to USEC.

6. Manage the Department's excess uranium inventories in a safe, economical and environmentally sound manner and generate revenues from the sale of the Departments excess uranium inventories in order to help balance the Federal budget.

PERFORMANCE MEASURES:

1. Meet all legal commitments for post-retirement life and medical costs for retirees who supported the Uranium Enrichment Program before July 1, 1993.

2. Conduct 34 special monitoring inspections in Russia and maintain permanent presence offices in Russia, to increase confidence that the LEU being purchased by the United States Enrichment Corporation has been derived from HEU removed from dismantled Russian nuclear weapons.

3. Complete the installation of UF_6 flow and enrichment measurement non-destructive assay (NDA) systems at the blend points at the Siberian Chemical Enterprise (SchE) facilities in Seversk. Collect and analyze resultant data.

4. Complete inspections on all depleted UF_6 cylinders that are heavily oxidized and 25 percent of the remaining cylinder inventory.

5. Clean and paint 2,400 depleted uranium cylinders. Clean 16,800 cylinder skirt ends that have been painted, 2,000 cylinder skirt ends awaiting painting and relocate 7,050 cylinders to permit 100 percent inspection.

6. Report to Congress on the effect the Russian HEU Purchase Agreement is having on the domestic uranium mining, conversion, and enrichment industries, and the operation of the gaseous diffusion plants.

7. Return at least $36 million in receipts from the sale of excess Departmental uranium (including Russian-origin uranium) to the Treasury. industries.

SIGNIFICANT ACCOMPLISHMENTS AND PROGRAM SHIFTS:

- Complete the transfer of remaining HEU oxides at the Portsmouth site to USEC for down blending into LEU as authorized by the USEC Privatization Act of 1996 (P.L. 104-134, Subchapter A).

- In FY 1995 and FY 1996, the Department supported USEC in transitioning from Department of Energy (DOE) regulatory requirements to the Nuclear Regulatory Commission (NRC) requirements for certification. This support included preparation of two compliance plans for achieving NRC standards to be submitted with the application for certification as well as technical support in revising the operating safety requirements now in effect at the facilities to technical safety requirements that meet NRC operating conditions. NRC assumed full regulatory authority for the leased diffusion plants on March 3, 1997.

- The Department will implement detailed protocol agreements detailing procedures governing all aspects of monitoring visits and verification activities pursuant to the Russian down blending of HEU for shipment of LEU to the U.S. and provide assistance as appropriate to Russian monitors in the U.S. and U.S. facilities subject to Russian monitoring activities.

- This NE program supported the Secretary's response to the Chairman of the Defense Nuclear Facilities Safety Board (DNFSB) on June 29, 1995, that answers the DNFSB May 5, 1995, Recommendation 95-1 concerning improved safety of cylinders containing DUF_6. An implementation plan was developed in consultation with the DNFSB and delivered on October 16, 1995. NE has completed delivery of the 5 major documents required as part of the implementation plan.

- Conduct a development and demonstration program that has the objectives of: (1) reducing the eventual disposal cost of depleted uranium; and (2) stimulating the use of depleted uranium and thereby reduce the level of material that must be disposed of in the future. Development activities will help define and select options that are identified in the preferred alternative in the draft programmatic environmental impact statement currently scheduled for release by the Department in July 1997.

- A draft Environmental Assessment (EA) on the Department's proposal to sell excess natural and low enriched UF_6 was issued for public comment in August 1996. Fourteen comment letters were received from public, state, federal and industry representatives. These comments were considered in developing the final EA, and the EA and a Finding of No Significant Impact were issued in October 1996.

SIGNIFICANT ACCOMPLISHMENTS AND PROGRAM SHIFTS: (continued)

- A draft Programmatic Environmental Impact Statement (PEIS) on the long term management of the Department's depleted uranium was issued for public comment on December 24, 1997. It is planned to issue the final PEIS in the last quarter of FY 1998 and the record of decision (ROD) in the first quarter of FY 1999. Following the release of the ROD a detailed implementation plan will be finalized to permit initiation of technology development by the private sector related to conversion of UF_6 (current form of stored depleted uranium) to uranium oxide or uranium metal (future storage and/or disposal form) to support the implementation of the ROD.

- Analyses supporting the Secretary's determination with regard to the sale of excess Departmental uranium in FY 1998 through FY 2003 is being drafted which would allow the sale of natural and low enriched uranium in order to support the Department's revenue target. Sales will begin to be executed upon the Secretary's determination that such sales can be made without having an adverse material impact on domestic uranium industries.

URANIUM PROGRAMS

PROGRAM FUNDING PROFILE
(Dollars in Thousands)

Sub-program	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Request
Uranium Programs					
Operating Expenses	$56,466	$61,600	($743)	$60,857	$66,700
Construction	4,000	3,000	0	3,000	0
SUBTOTAL, Uranium Programs	**$60,466**	**$64,600**	**($743)**	**$63,857**	**66,700**
Use of Prior Year Balances					
Operating Expenses	-14,816	0	0	0	0
Construction	-2,950	0	0	0	0
SUBTOTAL, Use of Prior Year	**-17,766**	**0**	**0**	**0**	**0**
SUBTOTAL, Uranium Programs	**$42,700[1]**	**$64,600**	**($743)[2]**	**$63,857**	**$66,700**

[1] FY 1997 funding for Uranium Programs was provided under the Uranium Supply and Enrichment Activities Appropriation.

[2] Contractor training reduction mandated by House Report language.

URANIUM PROGRAMS

PROGRAM FUNDING BY SITE
(Dollars in Thousands)

Laboratory/Plant/Installation	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Albuquerque Operations Office	$446	$0	$0	$0	$0
Argonne National Lab (East)	1,768	1,462	0	1,462	0
Brookhaven National Lab	0	159	0	159	208
Idaho Operations Office	20	0	0	0	0
K-25 Site	13,409	13,342	(80)	13,262	15,575
Lawrence Livermore National Lab	5,247	6,344	(26)	6,318	8,215
Los Alamos National Laboratory	3,030	1,162	0	1,162	761
New Brunswick Lab	455	488	0	488	625
Nevada Operations Office	20	0	0	0	0
Oak Ridge National Laboratory	0	0	0	0	0
Oak Ridge Operations Office	8,076	4,204	0	4,204	4,258
Oakland Operations Office	110	1,916	0	1,916	900
Ohio Field Office	15	0	0	0	0
Pacific Northwest National Laboratory	0	40	0	40	0
Paducah Gaseous Diffusion Plant	9,163	10,556	(113)	10,443	11,325
Pittsburgh Energy Technology Center	2,206	400	0	400	0
Portsmouth Gaseous Diffusion Plant	13,085	20,998	(400)	20,598	20,565
Richland Operations Office	291	0	0	0	0
Sandia National Laboratories	1,234	1,671	0	1,671	2,268
Washington Headquarters	1,891	1,858	(124)	1,734	2,000
SUBTOTAL	**$60,466**	**$64,600**	**$(743)**	**$63,857**	**$66,700**

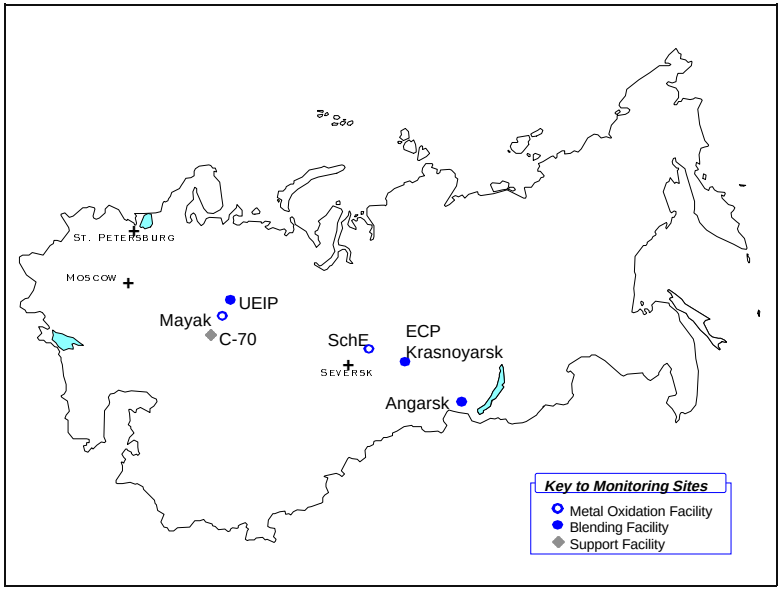
URANIUM PROGRAMS
(Dollars in Thousands)

I. Mission Supporting Goals and Objectives:

Uranium Programs' activities are primarily focused on accomplishing four major goals:

The first goal is to manage Nuclear Energy facilities in a safe, economic, and environmentally-sound manner. The Office of Nuclear Energy, Science and Technology (NE) is responsible for managing uranium enrichment facilities not leased by USEC and the Department's excess uranium and depleted uranium hexafluoride inventories. Until implementation of the Energy Policy Act of 1992, Nuclear Energy, Science and Technology was responsible for overseeing the daily operations at the gaseous diffusion plants (GDPs) at Portsmouth, Ohio, and Paducah, Kentucky. Under the terms of the July 1, 1993, DOE/USEC Lease Agreement, management responsibility for the day-to-day operations of these GDPs was shifted to USEC, which leases these facilities from the Department. In addition to the activities at the GDPs covered under the DOE/USEC Lease Agreement, NE manages numerous other remaining projects at its non-leased facilities in a safe, cost-effective and environmentally-sound manner. As part of the Office of Nuclear Energy, Science and Technology's goal for the management of depleted uranium hexafluoride inventories, the Department will complete the long term management strategy and issue the Record of Decision (ROD) by early FY 1999.

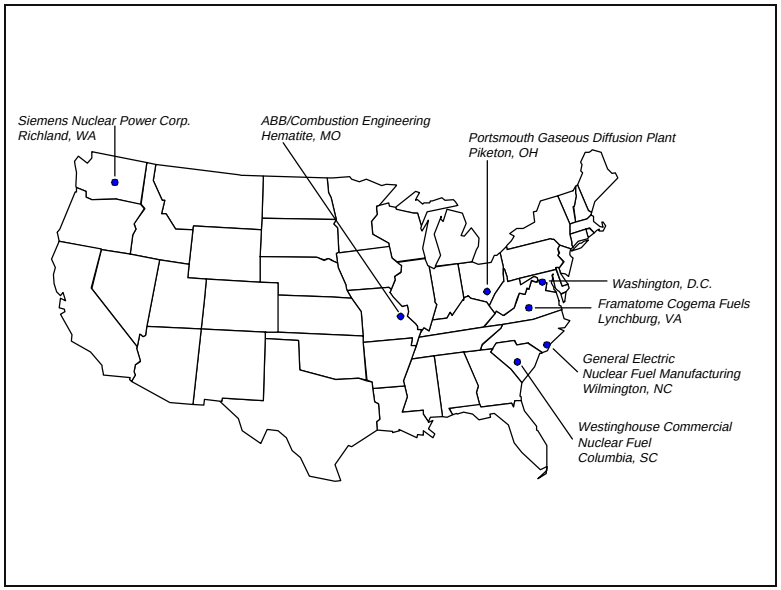
The second goal is to cooperate and coordinate with other Departmental Offices and Governmental Agencies in the Implementation of U.S. Non-Proliferation Policy. The U.S. is seeking reductions in worldwide inventories of fissile weapons materials and as part of this initiative, the USEC is purchasing quantities of Russian LEU derived from HEU that was removed from dismantled Russian weapons. In March 1994, U.S. and Russian representatives signed the Transparency Further



Russian Sites Associated with HEU Transparency

Arrangements Protocol, which establishes how monitoring activities will be conducted at facilities in Russia and the U.S. In accordance with this arrangement, the Department works to assure that there is confidence that Russian LEU sold to USEC is actually derived from excess weapons HEU.

The third goal is to manage the sale of the Departments' excess inventory of natural and low enriched uranium. Ensuring the sale of these inventories is accomplished in a manner which will maximize the return to the U. S. government while ensuring such sales meet the intent of the USEC Privatization Act and do not have an adverse material impact on domestic uranium industries.



U.S. Sites Associated with HEU Transparency

The last goal is to implement the ROD on the long term management of the 47,000 cylinders of depleted uranium. The ROD is planned to be issued by early FY 1999. While the analysis related to the ROD has begun, a significant consideration must await public comments on the draft programmatic EIS that was issued in December 1997. A draft cost analysis identifies a range of $4 billion to $8 billion for the disposal of the 47,000 cylinders of depleted uranium. This high cost has motivated the program to aggressively explore ways to significantly lower the estimated cost of disposal. Two approaches are: (1) develop and stimulate alternative uses of the depleted uranium that would result in the elimination of the disposal step (examples are use as a radiation shielding material in the repository) and (2) sponsoring technology development and demonstration projects with the private sector that can significantly lower the cost of converting UF6 to uranium metal and/or uranium oxides, a form that would be required for disposal or use. As part of the FY 1999 budget experimental programs related to depleted uranium use and uranium conversion will focus on study and analysis. The program will identify the most promising uses and the associated major impediments to the use.

II. Funding Schedule:

Program Activity	FY 1997	FY 1998	FY 1999	$ Change	% Change
Highly Enriched Uranium Equipment Shutdown and Inventory Disposition	$5,150	$14,000	$11,500	$-2,500	-18%
Maintenance of Leased and Non-Leased Facilities including corrective actions and nuclear safety	10,107	9,507	12,950	+3,443	+36%
Pre-existing Liabilities	6,932	8,587	9,800	+1,213	+14%
Transparency Measures	12,583	15,400	15,750	+350	+2%
Depleted Uranium Hexafluoride Cylinders and Maintenance	15,488	12,863	15,700	+2,837	+22%
Depleted Uranium Hexafluoride Development and Demonstration	2,206	500	1,000	+500	+100%
Construction	4,000	3,000	0	-3,000	-100%
SUBTOTAL, Uranium Programs (excluding Program Direction)	**$56,466**[1]	**$63,857**[2]	**$66,700**	**+$2,843**	+4%

[1] FY 1997 funding for Uranium Programs was provided under the Uranium Supply and Enrichment Activities Appropriation.

[2] Includes contractor training reduction mandated by House Report language.

III. Performance Summary - Major Accomplishments:	FY 1997	FY 1998	FY 1999
• Annually inspect 9,975 depleted uranium cylinders, repair defective cylinder valves as required, maintain procedures for conduct of operation, and maintain data base, including updating of inspection data. Conduct quadrennial inspections of 10,820 cylinders. Develop remote sensing inspection technologies to detect cylinder leaks and determine cylinder wall condition.	$6,837	$5,537	$8,745
• Restack depleted uranium storage cylinders to permit 100 percent visual inspection and ultrasonic inspection and procure concrete saddles (cylinders sit on saddles). Cylinders are restacked at the following approximate rates: FY 1997 - 12,000; FY 1998 - 16,500; and FY 1999 -7,050.	3,055	2,188	2,405
• Delivered all five FY 1996 DNFSB Recommendation 95-1 commitments on schedule with the final commitment being met in FY 1997. Continue cylinder painting program, initiated in FY 1996, at Paducah and paint approximately 986 cylinders in FY 1997. In FY 1998, DOE will initiate a three year painting program as a commitment to the DNFSB. Painting at Paducah will be 1,200 in FY 1998 and 1,400 in FY 1999. In addition, approximately 1,000 cylinders in Oak Ridge will be painted in FY 1999.	1,586	2,059	4,050
• Initiated the preparation of a programmatic environmental impact statement (PEIS) in January 1996 by issuing a notice of intent. Complete the draft engineering and cost analysis to support the development of a preferred alternative and the ROD. Issue the draft PEIS in December 1997 followed by the final PEIS by late FY 1998 and the ROD in early FY 1999.	4,010	3,055	473
• Conduct development and demonstration activities on those technologies which can significantly lower the disposition cost of depleted uranium. Explore and develop alternative uses of depleted uranium to reduce the amount for disposal. In FY 1999 the program will be reduced to studies only.	2,206	500	1,000
• Manage and administer the sale of the Department’s inventory of natural and low enriched uranium, complete required reports to Congress, prepare analyses to support Secretarial Determinations to allow the Department to sell excess uranium inventories and prepare requests for proposals to sell the materials.	350	350	350

III. Performance Summary - Major Accomplishments: (continued)	FY 1997	FY 1998	FY 1999
• Consistent with the requirements of the 1992 Energy Policy Act, continue to pay Lockheed Martin Energy Systems retirees post-retirement life and medical benefits and legal representation on behalf of DOE for lawsuits against DOE. Payment of $3,600,000 into an established sinking fund account for future post retirement life and medical benefits for Ohio Valley Electric Corporation is being deferred in FY 1997, FY 1998, and FY 1999.	$6,932	$8,587	9,800
• Continue to safeguard the HEU material at Portsmouth and perform maintenance and surveillance of the shutdown HEU equipment. During FY 1997 and FY 1998 the disposition of HEU oxide material will continue consistent with the 1996 legislation supporting USEC privatization and will be completed in FY 1999. The down blending of 13.2 metric tons of UF6 HEU will be completed in FY 1998. While the material remains at the Portsmouth site DOE must pay for the cost of safeguarding the HEU.	5,150	14,000	11,500
• The major activity related to nuclear safety was completed by March 3, 1997 when the NRC assumed the regulatory authority of the leased gaseous diffusion plants. During FY 1998, continue the billing verification of the USEC cost for implementing the DOE compliance plan required for NRC certification of the leased diffusion plants, update SARs as necessary, and assist with preparation of NRC's annual report to Congress.	0	1,100	1,320
• Continue to perform routine maintenance activities at the non-leased facilities. Activities include safety and health inspections, and corrective maintenance. Maintain PCB troughing systems in the process buildings leased to USEC, which involves routine inspections, repairs, spill cleanup and laboratory analysis. In addition, the program stores and manages uranium-bearing materials until eventual off-site disposition.	9,757	8,057	11,280

III. Performance Summary - Major Accomplishments: - continued	**FY 1997**	**FY 1998**	**FY 1999**
• Conduct up to 12 special monitoring inspections in FY 1997, up to 26 in FY 1998, and up to 34 in FY 1999. Maintain U.S. permanent presence offices in Russia FY 1997 through FY 1999. Fabricate and obtain the necessary Russian approvals in FY 1997 to install special monitoring equipment at UEIP, ECP, and SchE during FY 1998; and at Angarsk in FY 2000. Conduct six visits to Russia associated with installation of special monitoring equipment in FY 1997, five visits in FY 1998, and three visits in FY 1999. Support the Transparency Review Committee (TRC) meetings including allowable reception and representation expenses. TRC support includes conducting two familiarization visits in FY 1997 and one in FY 1999 to Russian facilities to be placed under U.S. Transparency monitoring.	12,583	15,400	15,750
• Line Item Construction project, 96-U-201, DUF_6 cylinder storage yards at the Paducah, Kentucky gaseous diffusion plant.	4,000	2,600	0
• Line Item Construction project, 98-U-200, DUF_6 cylinder storage yards at the K-25 Site in Oak Ridge, Tennessee and the Paducah, Kentucky gaseous diffusion plant.	0	400	0
• Small Business Innovative Research and Small Business Technology Transfer programs	0	24	27
Total, Uranium Program (excluding Program Direction)	**$56,466**	**$63,857**	**$66,700**

EXPLANATION OF FUNDING CHANGES FY 1998 to FY 1999:

Highly Enriched Uranium Equipment Shutdown and Inventory Disposition	-$2,500
• Safeguards costs will decrease since the Department's HEU oxide inventories will be sent offsite during FY 1999.	
Maintenance of Leased and Non-Leased Facilities including corrective actions and nuclear safety	+$3,443
• Key PCB disposal and other maintenance activities were deferred from FY 1998 until FY 1999.	
Pre-existing Liabilities	+$1,213
• This increase reflects fluctuations in the Department's liability associated with post-retirement, life and medical costs for retired contractor personnel at the gaseous diffusion sites power suppliers.	
Transparency Measures	+$350
• This increase is due to increased number of monitoring trips to Russia.	
Depleted Uranium Hexafluoride Activities	+$2,837
• An additional 1,200 depleted uranium cylinders are to be painted in FY 1999 and expanded development activities with industry partners.	
Development and Demonstration of depleted uranium uses and conversion	+$500
• This increase is due to escalation.	
Construction	-$3,000
• Construction activities will be postponed until FY 2000.	
Total Funding Changes, Uranium Programs	**+$2,843**

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY
CAPITAL OPERATING EXPENSES AND CONSTRUCTION SUMMARY

URANIUM PROGRAMS
($ in Thousands)

Capital Operating Expenses

	FY 1997	FY 1998	FY 1999	$ Change	% Change
GPP	$0	$0	$0	$0	0
AIP	0	0	0	0	0
Capital Equipment	0	0	0	0	0
1 CDRs	0	0	0	0	0
2 Other Project Related Costs	$70	$1,023	$923	-$100	-10

Construction Funded Project Summary

Project Number	Project Title	TEC	Previous Approp.	FY 1997 Approp.	FY 1998 Request	FY 1999 Approp.	Unapprop. Balance
98-U-200	DUF_6 cylinder storage yards, K-25 site, Oak Ridge, Tennessee	$5,800	$0	$0	$400	$0	$5,400
96-U-201	DUF_6 cylinder storage yards, Paducah, Kentucky Gaseous Diffusion Plant	23,700	0	4,000	2,600	0	17,100
TOTAL Uranium Programs		**$29,300**	**$ 0**	**$4,000**	**$3,000**	**$ 0**	**$22,500**

URANIUM PROGRAMS
(Dollars in Thousands)

I. Mission Supporting Goals/Ongoing Responsibilities:

The Uranium Programs' Program Direction account supports Office of Nuclear Energy, Science and Technology personnel at Headquarters and Operations Office personnel in the field providing technical direction to Uranium Programs activities, including HEU Transparency, cylinder maintenance, HEU shutdown, and maintenance of leased and non-leased facilities. This account also includes funding for administrative expenses, such as: training, computer hardware and software acquisitions, modifications, and other telecommunications services for work stations. In FY 1997, the Department's central administrative office established a Working Capital Fund (WCF) to provide funding for mandatory administrative costs, such as rent and utilities. Beginning in FY 1998, program direction funding for Uranium Programs is included in the single Office of Nuclear Energy, Science and Technology program direction account.

NE Headquarters has aggressively streamlined operations. On-board staff have been reduced from 258 in August 1993 to a current level of 129 (a 50 percent reduction). The Office is also meeting other streamlining goals. For example, senior executive and GS 15/14 positions have been reduced by 49 percent; the employee to supervisor ratio has been increased from 3:1 to 12:1; overall NE Headquarters travel has been reduced by about 30 percent from FY 1995 and NE Headquarters support services contracting has been reduced by about 40 percent from FY 1995.

II. Funding Table:

	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Summary - Budget					
Headquarters	$2,046	$0	$0	$0	$0
Field	2,909	0	0	0	0
TOTAL, BUDGET	**$4,955**	**$0**	**$0**	**$0**	**$0**
Adjustment-Unobligated/Uncosted Carryover	-955	0	0	0	0
NEW BUDGET AUTHORITY	**$4,000**	**$0**	**$0[1]**	**$0**	**$0[1]**

[1] Funding is provided under the Nuclear Energy R&D account.

	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Detailed Breakout					
Albuquerque					
Salary and Benefits	$ 0	$ 0	$0	$0	$ 0
Travel	30	0	0	0	0
Support Services	0	0	0	0	0
Other Related Expenses	0	0	0	0	0
Total	$ 30	$ 0	$0	$0	$ 0
Staffing	0	0	0	0	0
Idaho					
Salary and Benefits	$0	$0	$0	$0	$0
Travel	20	0	0	0	0
Support Services	0	0	0	0	0
Other Related Expenses	0	0	0	0	0
Total	$20	$0	$0	$0	$0
Staffing	0	0	0	0	0
Oakland					
Salary and Benefits	$90	$0	$0	$0	$0
Travel	15	0	0	0	0
Support Services	0	0	0	0	0
Other Related Expenses	5	0	0	0	0
Total	$110	$0	$0	$0	$0
Staffing	2	0	0	0	0

	FY 1997 Current Appropriation	FY 1998 Original Appropriation	FY 1998 Adjustments	FY 1998 Current Appropriation	FY 1999 Budget Request
Oak Ridge					
Salary and Benefits	$1,954	$0	$0	$0	$0
Travel	110	0	0	0	0
Support Services	0	0	0	0	0
Other Related Expenses	670	0	0	0	0
Total	$2,734	$0	$0	$0	$0
End of Year Staffing	27	0	0	0	0
Ohio					
Salary and Benefits	$0	$0	$0	$0	$0
Travel	15	0	0	0	0
Support Services	0	0	0	0	0
Other Related Expenses	0	0	0	0	0
Total	$15	$0	$0	$0	$0
End of Year Staffing	0	0	0	0	0
Headquarters					
Salary and Benefits	$1,600	$0	$0	$0	$0
Travel	200	0	0	0	0
Support Services	0	0	0	0	0
Other Related Expenses	246	0	0	0	0
Total	$2,046	$0	$0	$0	$0
End of Year Staffing	17	0	0	0	0
Adjustment - Unobligated/ Uncosted Carryover	-955	0	0	0	0
Budget Authority	$4,000	$0	$0	$0	$0

III. Performance Summary:

FY 1997 Measurable Performance Activities:

The key benchmarks by which NE measured its FY 1997 streamlining performance are:

- Reduced senior executive positions to four (a 82 percent reduction since FY 1993), and reduced senior grade level (SES/15/14) positions by 49 percent since FY 1993.
- Continued to exceed National Performance Review (NPR) streamlining goals to reduce administrative positions by 50 percent.
- Exceeded DOE employee to supervisor ratio target of 11:1
- Continued to reduce reliance on support service contractors by about 40 percent and to reduce Headquarters travel by about 30 percent from FY 1995 levels.

IV. Explanation of Funding Changes from FY 1998 to FY 1999: N/A

URANIUM PROGRAMS
Program Direction

Headquarters - Other Related Expenses
($ in thousands)

OTHER RELATED EXPENSES	FY 1997	FY 1998	FY 1999	CHANGE
Working Capital Fund	$ 0	$ 0	$ 0	$ 0
ADP/TeleVideo Hardware and Software Procurement/Maintenance	75	0	0	0
Subscriptions/Publications	10	0	0	0
Training	15	0	0	0
Other Miscellaneous Expenses	106	0	0	0
Office Logistical Support	40	0	0	0
TOTAL OTHER RELATED EXPENSES	**$ 246**	**$ 0**	**$ 0**	**$ 0**

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CONSTRUCTION PROJECT DATA SHEETS
URANIUM PROGRAMS - PLANT AND CAPITAL EQUIPMENT
(Tabular dollars in thousands. Narrative material in whole dollars.)

1.	Title and Location of Project:	DUF_6 cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a. Project No.: 98-U-200 2b. Construction Funded
3a.	Date A-E Work Initiated (Title I Design Start Scheduled): 3rd Qtr. FY 1999		5. Previous Cost Estimate: None Total Estimated Cost (TEC): $0
3b.	A-E Work (Title I & II) Duration: 6 months		Total Project Cost (TPC): $0
4a.	Date Physical Construction Starts: 2nd Qtr. FY 2000		6. Current Cost Estimate: TEC -- $ 5,800[1]
4b.	Date Construction Ends: 3rd Qtr. FY 2001		TPC -- $6,200

7. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligation	Costs
1998	$400	$0	$400	$0
1999	$0	$0	$0	$400
2000	$5,400	$0	$5,400	$3,100
2001	$0	$0	$0	$2,300

[1] TEC has been revised upward to relfect the delay in schedule due to project not being funded in FY 1999.

1.	Title and Location of Project:	DUF_6 cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a. 2b.	Project No.: 98-U-200 Construction Funded

8 Project Description, Justification, and Scope:

The mission of this project is to provide safe long-term storage of DUF_6 tails cylinders until eventual disposition.

The K-25 Site has stored DUF_6 cylinders outdoors during the past 40 years. Recent inspection of the storage conditions discovered areas of poor drainage and cylinder-ground contact. Poor storage conditions are major contributors to accelerated deterioration of the external cylinder surfaces. Breached cylinders have been discovered indicating that actions need to be taken to prevent further degradation of the cylinders.

This project will provide for construction of a new DUF_6 cylinder storage yard at either Oak Ridge, Tennessee, or Paducah, Kentucky. The new storage yard, approximately four paved acres in size, will replace the existing K-1066-K cylinder storage yard and includes: a well-drained, paved concrete yard; capability for storing approximately 3,000 cylinders with adequate spacing for cylinder handling and inspections; a stormwater detention basin; stormwater management system (e.g., a stormwater diversion ditch, pavement underdrain system, and tie-ins to the existing storm drain system); fencing; relocation of a portion of an existing road and yard lighting.

The site for the new DUF_6 cylinder storage yard is yet to be determined. Final site selection will be determined by the Programmatic Environmental Impact Statement for DUF_6 cylinders.

1.	Title and Location of Project:	DUF_6 cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a.	Project No.: 98-U-200
			2b.	Construction Funded

9.	Details of Cost Estimate:	Item Cost	Total Cost
	a. Design and Management Costs		$1,430
	1. Engineering design and inspection at approximately 12 percent of items c through f below (Design, Drawings, and Specifications $200).:	$400	
	2. Construction management costs at approximately 15 percent of items c through f below	515	
3.	Project management at approximately 15 percent of items c through f below	515	
	b. Land and land rights		0
	c. Construction costs		3,448
	1. Improvements to land	$206	
	21. Buildings	0	
	3. Other structures	2,470	
	4. Utilities	360	
	5. Special facilities	412	
	d. Standard equipment		0
	e. Major computer items		0
	f. Removal cost less salvage		0
	f. Design and project liaison, testing, checkouts and acceptance		52
	h. Subtotal (a. through g.)		4,930
	i. Contingencies at approximately 17 percent of above costs		870
	j. Total line item cost (Section 11.a. 1(a))		5,800
	k. LESS: Non-Federal Contribution		0
	l. Net Federal total estimated cost (TEC)		$5,800

1.	Title and Location of Project:	DUF_6 cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a. 2b.	Project No.: 98-U-200 Construction Funded

10. Method of Performance:

The DOE Oak Ridge Operations Office will provide overall project management.

Design and inspection will be performed under negotiated architect-engineer contract and by the operating contractor. To the extent feasible, construction and procurement will be accomplished by fixed-price contracts and subcontracts awarded on the basis of competitive bidding administered by the construction manager.

1.	Title and Location of Project:	DUF_6 cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a.	Project No.: 98-U-200
			2b.	Construction Funded

11. Schedule of Project Funding and Other Related Funding Requirements:

	Previous Years	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	Total
a. Total projects costs								
1. Total facility costs								
(a) Line item (Section 9j)	$0	$0	$0	$0	$400	$3,100	$2,300	$5,800
(b) Plant engineering & design	0	0	0	0	0	0	0	0
(c) Oper. exp. funded equipment	0	0	0	0	0	0	0	0
(d) Inventories	0	0	0	0	0	0	0	0
Total facility costs (Federal and Non-Federal)	$0	$0	$0	$0	$400	$3,100	$2,300	$5,800
2. Other project costs								
(a) R&D necessary to complete project	0	0	0	0	0	0	0	0
(b) Conceptual design costs	0	30	0	0	0	0	0	30
(c) Decontamination and Decommissioning (D&D)	0	0	0	0	0	0	0	0
(d) NEPA documentation costs	0	0	0	70	0	0	0	70
(e) Other project-related costs	0	0	0	0	200	100	0	300
(f) Total other project costs	0	30	0	70	200	100	0	400
(g) Total projects costs	0	30	0	70	600	3,200	2,300	6,200
(h) LESS: Non-Federal contribution	0	0	0	0	0	0	0	0
(I) Net Federal total project costs (TPC)	$0	$30	$0	$70	$600	$3,200	$2,300	$6,200

1. Title and Location of Project:	DUF_6 cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a. Project No.: 98-U-200 2b. Construction Funded

11. Schedule of Project Funding and Other Related Funding Requirements: (continued)

	FY2001
b. Related annual funding (estimated life of project--25 years)	$150
1. Facility operating costs	0
2. Facility maintenance and repair costs	0
3. Programmatic operating expenses directly related to the facility	0
4. Capital equipment not related to construction but related to the programmatic effort in the facility	0
5. GP or other construction related to the programmatic effort in the facility	0
6. Utility costs	20
7. Other costs	0
Total related annual funding	$170

1.	Title and Location of Project:	DUF_6 cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a.	Project No.: 98-U-200
			2b.	Construction Funded

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements:

a. Total project costs

1. Total facility costs

(a) Line item (Section 11) -- Costs for design, procurement, and construction of the DUF_6 cylinders and storage yards are estimated to be $5,800,000.

(b) Plant engineering & design -- No narrative required.

(c) Operating expense funded equipment -- No narrative required.

(d) Inventories -- No narrative required.

2. Other project costs

(a) R&D necessary to complete project -- No narrative required.

(b) Conceptual design costs -- A conceptual design report was completed in May 1996 at a cost of $30,000.

(c) Decontamination and Decommissioning (D&D) -- No narrative required.

(d) NEPA documentation costs -- The NEPA for this project is expected to require a NEPA-Environmental Assessment. Estimated cost is $70,000.

1. Title and Location of Project:	DUF_6 cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a. Project No.: 98-U-200 2b. Construction Funded

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements: (continued)

(e) Other project-related costs -- VE Studies, Safety Assessments, QA Plan, Site Characterization, Geotechnical Survey, Design Criteria, Readiness Review activities and other miscellaneous supporting and project documentation will be proposed for $300,000. The programmatic operating expenses directly related to the facility included incremental management required for the operation of the K-1066-K DUF_6 cylinder storage yard and the annual expenses of cylinder handling in this yard.

(f) Non-Federal contribution -- No narrative required.

b. Related annual funding

1. Facility operating costs -- The estimated cost of opening a DUF_6 cylinder yard is minimal, however, the stormwater collection detention pond will require periodic sampling, testing, and release of the rain water from the pond to Storm Drain/KPDES outfall. This cost is estimated at $150,000 annually and should only require one employee periodically.

2. Facility maintenance and repair costs -- No narrative required.

3. Programmatic operating expenses directly related to the facility -- No narrative required.

4. Capital equipment not related to construction but related to the programmatic effort in the facility -- No narrative required.

5. GPP or other construction related to the programmatic effort in the facility -- No narrative required.

1.	Title and Location of Project:	DUF_6 cylinder storage yards, K-25 Site, Oak Ridge, Tennessee, and Paducah, Kentucky, gaseous diffusion plant	2a. 2b.	Project No.: 98-U-200 Construction Funded

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements: (continued)

6. Utility costs -- The cylinder yard will require electrical service estimated at $20,000 per year.

7. Other costs -- No narrative required.

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(Tabular dollars in thousands. Narrative material in whole dollars.)

1.	Title and Location of Project:	DUF_6 cylinder storage yards, Paducah, Kentucky gaseous diffusion plant	2a. Project No.: 96-U-201 2b. Construction Funded

SIGNIFICANT CHANGES

- Changes in TPC

  - Decreased from $28,325,000 to $28,231 due to lower than planned NEPA documentation costs and other project-related costs on in Section 11.a.2.

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(Tabular dollars in thousands. Narrative material in whole dollars.)

1.	Title and Location of Project: DUF_6 cylinder storage yards, Paducah, Kentucky gaseous diffusion plant	2a.	Project No.: 96-U-201
		2b.	Construction Funded
3a.	Date A-E Work Initiated (Title I Design Start Scheduled): 2nd Qtr. FY 1996	5.	Previous Cost Estimate: Total Estimated Cost (TEC): $23,700
3b.	A-E Work (Title I & II) Duration: 9 months		Total Project Cost (TPC): $28,325
4a.	Date Physical Construction Starts: 4th Qtr. FY 1996	6.	Current Cost Estimate: TEC -- $ 23,700[1]
4b.	Date Construction Ends: 4th Qtr. FY 2002		TPC -- $28,231

7. Financial Schedule (Federal Funds):

Fiscal Year	Appropriations	Adjustments	Obligation	Costs
1996	$3,000[2]	$0	$3,000	$515
1997	$4,000	$0	$4,000	$4,542
1998	$2,600	$0	$2,600	$4,200
1999	$0	$0	$0	$0
2000	$5,000	$0	$5,000	$2,600
2001	$5,500	$0	$5,500	$6,000
2002	$3,600	$0	$3,600	$5,843

[1] TEC can accomodate the delay in schedule.

[2] Funded under Uranium Supply and Enrichment Activities appropriation in FY 1996 and FY 1997.

1.	Title and Location of Project:	DUF_6 cylinder storage yards, Paducah, Kentucky gaseous diffusion plant	2a.	Project No.: 96-U-201
			2b.	Construction Funded

8 Project Description, Justification, and Scope:

This project will provide the design and construction of a new depleted uranium hexafluoride (DUF6) cylinder storage yard of approximately 465,000 square feet, designated C-745-T, and the renovation of C-745-K, L, M, N, and P cylinder storage yards from gravel to concrete. This project will entail designing and constructing several reinforced concrete haul roads, updated and centrally powered lighting fixtures, improved drainage, and extension of the existing patrol road and security fence.

The mission of this project is to provide safe long-term storage of DUF6 cylinders until eventual disposition. C-745-T yard is necessary due to the overcrowding of cylinders in existing Department of Energy (DOE) cylinder yards. Past practices of stacking cylinders in as tight a configuration as possible has led to several breaches due to lifting lug impingement and does not allow room for adequate visual inspection of cylinders. Current stacking requirements are designed to allow for better inspections and do not allow cylinder lifting lug impingement on adjacent side or top row cylinders. Additionally, C-745-T is large enough to allow relocation of all DOE cylinders from C-745-A, B, and C yards. C-745-A and B are leased to the United States Enrichment Corporation (USEC), and C-745-C is a very old yard, with cylinders stored in single rows on concrete pylons with wood chocks. It has poor-to-no drainage, and would be difficult to upgrade. Relocating these cylinders to C-745-T has the added benefit of having all DOE cylinders stored in the same central cylinder storage area on concrete saddles, and on new well-drained concrete yards. Due to space limitations for the temporary storage of cylinders in the yards being renovated, C-745-T must be constructed before any work can begin in C-745-K, L, M, N, or P yards.

The extensive drainage system for the improved cylinder storage yards will collect and drain all precipitation to the DOE permitted outfall Kentucky Pollutant Discharge Elimination System (KPDES) 17. Currently the cylinder yards do not drain well and often have standing water above the level of the cylinder bottoms after storms. Additionally, the current cylinder yards drain to five different outfalls of which only one is DOE permitted. The improved drainage system will direct runoff to a single outfall making the flows into outfall KPDES 17 directly attributable to the cylinder yards.

1.	Title and Location of Project:	DUF_6 cylinder storage yards, Paducah, Kentucky gaseous diffusion plant	2a.	Project No.: 96-U-201
			2b.	Construction Funded

8 Project Description, Justification, and Scope: (continued)

With the completion of these concrete yards, reinforced concrete haul roads, improved lighting and drainage the DOE DUF6 cylinders at PGDP will be in a stabilized condition for continued safe long-term storage.

1.	Title and Location of Project:	DUF_6 cylinder storage yards, Paducah, Kentucky gaseous diffusion plant	2a.	Project No.: 96-U-201
			2b.	Construction Funded

9.	Details of Cost Estimate:	Item Cost	Total Cost
a.	Design and Management Costs		$3,310
	(1) Engineering design and inspection at approximately 3.3 percent of construction costs, Item c (Design, Drawings, and Specifications $272,000):	552	
	(2) Construction management costs at approximately 11 percent of Item c below	1,806	
	(3) Project management at approximately 5.8 percent of Items c below	952	
b.	Land and land rights		0
c.	Construction costs		16,463
	(1) Improvements to land	12,239	
	(2) Buildings	0	
	(3) Construction Support	3,100	
	(4) Utilities	1,124	
	(5) Special facilities	0	
d.	Standard equipment		0
e.	Major computer items		0
f.	Removal cost less salvage		0
f.	Design and project liaison, testing, checkouts and acceptance		80
h.	Subtotal (a. through g.)		19,853
i.	Contingencies at approximately 19.4 percent of above costs		3,847
j.	Total line item cost (Section 11.a. 1(a))		23,700
k.	LESS: Non-Federal Contribution		0
l.	Net Federal total estimated cost (TEC)		$23,700

1.	Title and Location of Project:	DUF_6 cylinder storage yards, Paducah, Kentucky gaseous diffusion plant	2a. 2b.	Project No.: 96-U-201 Construction Funded

10. Method of Performance:

DOE Oak Ridge Operations (OR) will manage the project, with the negotiated architect-engineer (A-E) contractor providing Title I and II site specific design and specific Title III as-built drawing support. The operating contractor will provide A-E support, project integration, site project management, and Title III inspection of construction. The construction manager and its fixed price subcontractors (FPSCs) will perform all major construction activities. The operating contractor will perform all process and utility tie-ins, and interfacing to the existing operations.

1.	Title and Location of Project:	DUF_6 cylinder storage yards, Paducah, Kentucky gaseous diffusion plant	2a.	Project No.: 96-U-201
			2b.	Construction Funded

11. Schedule of Project Funding and Other Related Funding Requirements:

	Previous Years	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002 and Beyond	Total
a. Total project costs									
1. Total facility costs									
(a) Line item (Section 9.j)	$0	$515	$4,542	$4,200	$0	$2,600	$6,000	$5,843	$23,700
(b) Oper. exp. funded equipment	0	0	0	0	0	0	0	0	0
(c) Plant & Engineering Design	0	0	0	0	0	0	0	0	0
(d) Inventories	0	0	0	0	0	0	0	0	0
Total facility cost (Federal and Non-	$0	$515	$4,542	$4,200	$0	$2,600	$6,000	$5,843	$23,700
2. Other project costs									
(a) R&D necessary to complete	$0	$0	$0	$0	$0	$0	$0	$0	$0
(b) Conceptual design costs	137	4	0	0	0	0	0	0	141
(c) Decontamination &	0	0	0	0	0	0	0	0	0
(d) NEPA documentation costs	11	107	1	0	0	0	0	0	119
(e) Other project-related costs	29	127	0	823	823	0	0	2,469	4,271
(f) Total other project costs	177	238	1	823	823	0	0	2,469	4,531
(g) Total project costs	177	753	4,543	5,023	823	2,600	6,000	8,312	28,231
(h) Non-Federal contribution	0	0	0	0	0	0	0	0	0
(I) Net Federal total project cost	$177	$753	$4,543	$5,023	$823	$2,600	$6,000	$8,312	$28,231

1.	Title and Location of Project:	DUF_6 cylinder storage yards, Paducah, Kentucky gaseous diffusion plant	2a.	Project No.: 96-U-201
			2b.	Construction Funded

11. Schedule of Project Funding and Other Related Funding Requirements: (continued)

b.	Related annual funding (estimated life of project--25 years)	$150
1.	Facility operating costs	0
2.	Facility maintenance and repair costs	0
3.	Programmatic operating expenses directly related to the facility	0
4.	Capital equipment not related to construction but related to the programmatic effort in the facility	25
5.	GPP or other construction related to the programmatic effort in the facility	0
6.	Utility costs	50
7.	Other costs	0
	Total related annual funding	$225

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements:

a. Total project costs
   1. Total facility costs
      (a) Line item (Section 9.j) -- Construction Line Item costs for engineering, procurement, and construction of DUF6 cylinder storage yards project are estimated to be $23,700,000.
      (b) Expense funded equipment -- No narrative required.
      (c) Plant & Engineering Design -- No narrative required.
      (d) Inventories -- No narrative required.

1.	Title and Location of Project:	DUF_6 cylinder storage yards, Paducah, Kentucky gaseous diffusion plant	2a.	Project No.: 96-U-201
			2b.	Construction Funded

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements: (continued)

2. Other project costs
   (a) R&D necessary to complete project -- No narrative required.
   (b) Conceptual design costs -- To identify a Uranium Programs DUF6 cylinder storage yard, project for PGDP, a Conceptual Design Report was approved by DOE in May 1995 for a cost of $141,000.
   (c) Decontamination and Decommissioning (D&D) -- No narrative required.
   (d) NEPA documentation costs -- The construction of C-745-T Cylinder Storage Yard is expected to require a NEPA-Environmental Assessment. Final cost was $119,000.
   (e) Other project-related costs -- Value Engineering Studies, Safety Assessments, Quality Assurance Plan, Site Characterization, Geotechnical Survey, and other miscellaneous supporting and project documentation will be prepared for $180,000. The programmatic operating expenses directly related to the facility included incremental management required for the operation of the C-745-G UF6 Cylinder Storage Yard and the annual expenses of cylinder movement and restacking in these yards. The cylinder movement and restacking from C-745-A, B, and C to C-745-T, and the movement between C-745-T and C-745-K, L, M, N, and P is estimated at $823,000 per year for the first five years starting in 1998. After 2004, all DOE cylinders will be located in the proper new concrete yards and should be stacked correctly.
   (f) Non-Federal contribution -- No narrative required.

b. Related annual funding

1. Facility operating costs --The estimated cost of opening C-745-G UF6 Cylinder Yard is minimal, however the storm water collection retention/detention pond will require periodic sampling, testing, and release of the rain water from the pond to KPDES outfall 17. This cost is estimated at $150,000 annually and should only require one employee periodically.

1.	Title and Location of Project:	DUF_6 cylinder storage yards, Paducah, Kentucky gaseous diffusion plant	2a.	Project No.: 96-U-201
			2b.	Construction Funded

12. Narrative Explanation of Total Project Funding and Other Related Funding Requirements: (continued)

2. Facility maintenance and repair costs -- No narrative required.

3. Programmatic operating expenses directly relating to the facility -- No narrative required.

4. Capital equipment not related to construction but related to the programmatic effort in the facility -- Capital equipment purchases estimated at $25,000 for additional or upgraded UF6 trailers may be necessary to support the movement of cylinders from C-745-A, B, and C to C-745-T.

5. GPP or other construction related to the programmatic effort of the facility -- No narrative required.

6. Utility costs -- The cylinder yard will require electrical service estimated at $50,000 per year.

7. Other costs -- No narrative required.